The Builder.

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Thames-street.

HANDSOMEST streets are often the least interesting, and many an out-of-the-way place with tumble-down houses has a better story to tell to the inquirer than has many a terrace of architectural houses. There is a street running parallel with the river which is well known to those who use the different boats that start from London to various parts of England and elsewhere, but few of these visitors make any stay in it, for a street of warehouses and wharfs is not likely to be chosen as a favourite lounge. Thames-street, however, is one of the most interesting streets in London, and its history may be said to extend back as far as that of the City itself. During the earliest Roman occupation, London was a military post, covering the passage of the river, with a permanent camp settled in it, and it afterwards grew into a civil town. This early London probably extended over ground upon the south portion of which Thames-street was afterwards built. It has been thought that Dowgate was the western gate of the first Roman London, and Billingsgate the eastern gate. Many remains of old houses have been discovered here, one being the relics of what was supposed to be a public bath and sudatory. Later in the history of this wonderful London, when the banks of the Thames were built upon with noble houses, this had become a famous street. Thames-street has been noted at different periods in its history for wine, fish, and cheese. The Vintners' Company is of great antiquity, and is the eleventh on the list of the twelve great companies of London. The patron saint of the company is St. Martin, and one of the churches in the ward of Vintry was called St. Martin's-in-the-Vintry. The hall of the company, which is a modern building, stands in Upper Thames-street, and contains portraits of Charles II., James II., Marie d'Este, and Prince George of Denmark. The "Three Cranes" in the Vintry were long well-known objects, and the remembrance of them still lingers in Three Cranes Wharf. Stow writes, "Vintry Ward, so called of Vintners and of the Vintry, a part of the bank of the river Thames, where the merchants of Burdeaux craned their wines out of lighters and other vessels, and there landed and made sale of them."

The Vintners have reason to glory in a lately-discovered fact, by which the interest of Thames-street as haunted ground has been greatly increased. Mr. Furnivall found, after diligent search, among the national records, that the father of our great poet Chaucer was a vintner in Thames-street, and that at least twelve years and a-half of the poet's life (June 8, 1374, till near December, 1386) were spent there, close by his future work-place,—the Custom-house. On June 19, 1380, Geoffrey Chaucer, son of John Chaucer, vintner, re-leased to Henry Herbury all his (G. C.'s) right to his father's former house in Thames-street. John Chaucer is known to have been the son of Richard Chaucer, vintner, and several other members of the family were of the same trade. It is thus quite possible that the author of the Canterbury Tales was storing his mind with pictures of life and character while he was serving his father's customers with wine.

Thames-street was also known as Stockfish-monger-row, and the old fish-market of London was "above bridge" in what is now called Old Fish-street-hill, before Billingsgate supplanted Queenhithe. The London Fishmongers were formerly divided into two distinct classes, called respectively "Stock-fishmongers" and "Salt-fishmongers," and the trade was a flourishing one. Stow, in describing Old Fish-street, takes occasion to mention the houses possessed by the fishmongers, which "were at the first but movable boards or stalls, set out on market-days to show their fish there to be sold; but procuring licence to set up sheds, they grew to shops, and by little and little to tall houses of three or four stories in height." Respecting the third commodity mentioned above, a writer in the *Connoisseur* (1754), says, "I had rather live all my days among the cheesemongers' shops in Thames-street, than pass such another spring in this filthy country"; and Gay, when characterising the London streets, writes in his "Trivia":—

"Thames-street gives cheeses, Covent Garden fruits,
Moorfields old books, and Monmouth-street old suits."

So much for three of the early specialities of Thames-street, viz., wine, fish, and cheese. In the fourteenth century, although the street was in the heart of London, it was not overcrowded, and we learn from the Hustings Roll that Henry Chaucer, Vintner, and Juliana his wife, made a conveyance of part of their garden, which was near the stream Walbrok, on April 4, 1373. The river front of the street exhibited a long line of handsome buildings, and in the street itself were several churches. The Great Fire made a great change in the place, for none of the mansions, and some only of the churches, were rebuilt. Pepys went into the City at the time of the fire, and found that the overworked Lord Mayor had lost his head, and was hurrying about without knowing what he did. He noted in his diary:—"The houses too so very thick thereabouts and full of matter for burning, as pitch and tar in Thames-street, and warehouses of oyle and wines and brandy and other things." In the following year, he says, "Walked all along Thames-street, which I have not seen since it was burned, as far as Billingsgate, and there do see a brave street like to be, many brave houses being built, and of these a great many by Mr. Jaggard, but the raising of the street will make it mighty fine."

Thames-street extends from Blackfriars to the Tower; that portion above London Bridge is called Upper Thames-street, and that below Lower Thames-street. In tracing the history of the street from west to east, we commence with Puddle Dock, which, according to Stow, took its name from one Puddle, who kept a wharf there. This place is frequently mentioned by our old writers. Ben Jonson introduces it into his "Bartholomew Fair":—

"Puddle Wharf,
Which place we'll make bold with to call it our Abydos,
As the Bankside is our Sestos."

The house in Blackfriars which Shakspeare left by his will to his daughter, Susannah Hall, was near Puddle Wharf.

The name of Castle Baynard Wharf retains the memory of Baynard Castle, which was for many years an imposing object as seen from the Thames. It was built by a follower of William the Norman, named Baynard, but was soon forfeited to the Crown, either by the founder or one of his descendants. In the year 1111 it was granted to Robert Fitzgerald, son of Gilbert Earl of Clare, in whose family it remained for three centuries. In 1428, by another forfeiture, it became a part of the royal possessions, and was soon after almost entirely destroyed by fire. It was granted to Humphry, Duke of Gloucester, who rebuilt it, but at his attainder it reverted to the Crown, and here the Duke of Buckingham offered the crown to the Duke of Gloucester, afterwards Richard III. From this reign to that of Queen Elizabeth, Baynard's Castle was used on many formal occasions by the Court. The Earls of Pembroke were tenants at will for a time, and the "plucky" Countess, "Anne Pembroke, Dorset and Montgomery, lived here, while her husband was at the Cockpit, at Whitehall." Pepys relates that on the 19th of June, 1660, "My Lord [Lord Sandwich] went at night with the King to Baynard's Castle to supper."

Paul's Wharf is of no great interest, but two churches were named after it—St. Bennet's and St. Peter's. The latter was destroyed in the Great Fire, and not rebuilt. The former was rebuilt by Sir Christopher Wren in 1663. St. Bennet's is worthy of a passing notice, because Inigo Jones, Sir William Le Neve, John Philipott, and William Oldys are buried here. The last three were heralds from the college close by. Ashmole, the antiquary, was married to his first wife in this church (1638), and Dr. Samuel Clark held the living for a short time.

Broken Wharf, according to Stow, is "so called of being broken and fallen into the Thames." Here Bevis Bulmer erected a brick waterhouse for supplying Cheapside and Fleet-street with water from the Thames. The engine employed was worked by horses, and the water conveyed by lead pipes.

Queenhithe is said to have been originally called Edred's hithe, from "Edred, owner thereof," but it has been known as Queen's-bank, or Queen-hithe, from a very early period. Peele, in his play of Edward I., also calls it Pottershithe. The church of St. Michael, Queenhithe, was rebuilt by Wren after the Fire. The vane, was made in the form of a ship, and of a size capable of holding a bushel of grain. The church of St. Martin, Vintry, was burnt in the Fire, and not rebuilt. Dowgate should be, according to Stow, Downegate, on account of the "down-going or descending thereunto," and the "Dowgate torrents," caused by the descent of the rain down Dowgate-hill to Thames-street, have been famous. The church of Allhallows the Great, also known as "Allhallows in the Ropery," was destroyed in the Fire, but re-erected in 1683 by Sir Christopher Wren. According to Pepys, this was one of the first churches that set up the King's arms before the Restoration. Allhallows the Less, or Allhallows on the Cellar, was destroyed in the Fire, and not rebuilt. The steeple and choir stood on an arched gate, which was the entry to a great house called Coldharbour. This was a place of great antiquity, but Stow could find no earlier mention of the messuage than the 13th of Edward II., when it was demised or let to Henry Stow, draper, anno 1320. After a time it was sold to Sir John de Poultney, who was four times Lord Mayor, and after him it was called Poultney's Inn. He did not live here long, and John, Earl of Huntingdon, magnificently entertained his brother, Richard II., in the house. In 1410 Henry IV. granted the house to his son Henry Prince of Wales. In 1483 Richard III. gave it to the Heralds, but after the battle of Bosworth they were turned out, and it became the temporary residence of Margaret, Countess of Richmond, the mother of Henry VII. In the reign of Henry VIII. the Bishop of Durham's house in the Strand was taken into the King's hands, and Bishop Tunstal was lodged at Coldharbour. In the last year of Edward VI. the house was taken from Tunstal and given to the Earl of Shrewsbury. In 1600 it was pulled down by Gilbert seventh Earl

of Shrewsbury, and a large number of small tenements were built upon the site. The old Watermen's Hall was in Coldharbour, but the new hall was built in Lower Thames-street near the Custom-house. In the old times, before bridges and steamboats, the London watermen were a numerous body. They were made a company by Act of Parliament passed in the 2nd & 3rd of Philip and Mary. In Elizabeth's reign the number of watermen was set down by Taylor the water poet at 40,000, and in Anne's reign the number was the same. When Blackfriars Bridge was built the Watermen's Company accepted 13,650*l.* as compensation for the loss of the Sunday ferry, maintained by them for charitable purposes. In 1744 there was a fire at the malt warehouse belonging to Sir William Calvert & Co., adjoining their brewhouse, when 4,000 quarters of malt were consumed. After the fire the Watermen's Company removed to Lower Thames-street.

The Steelyard, or Stilliard was formerly the location of the Hanse merchants, who are said to have obtained a settlement in London as early as the year 1250. The place derives its name from the King's steelyard or beam which was erected here for weighing the tonnage of goods imported into London. When the tonnage was transferred to the City authorities, the King's beam was moved first to Cornhill, and afterwards to Weighhouse-yard in Little Eastcheap. Henry III. granted several valuable privileges to the Hanse merchants, which were renewed and confirmed by Edward I., and for many years these foreigners continued to be successful, but in the reign of Edward VI. the Merchant Adventurers made complaint against them, and "sentence was given that they had forfeited their liberties and were in like case with other strangers." Ambassadors came over from Hamburg and Lubeck to intercede with the King that this sentence might be rescinded, but without effect. In Elizabeth's reign a proclamation was issued by which the merchants of the Steelyard were expelled the kingdom, and commanded to depart by the 28th of February, 1597-8. After their departure it was ordered that the "house of the Stilliards should be used and employed for the better bestowing and safe custodie of divers provisions of the navy." Sometime after the Great Fire the Hanse merchants presented the parish of Allhallows with a handsome screen of oak, manufactured at Hamburg, in memory of their former connexion with this country. The "Old Swan" well deserves its name, as it is of great antiquity as a landing-place. In "A Chronicle of London from 1089 to 1483" "The Swan, in Tempse-street," is mentioned. The Swan stairs were much used before Old London Bridge was pulled down, as most prudent persons preferred landing here and walking to the other side of the bridge to trusting themselves to the rapids that ran through the narrow arches. In 1429 the Duke of Norfolk and his suite had their boat overturned in passing under the bridge, and one of Ray's proverbs—(London Bridge was made for wise men to go over and fools to go under)—shows the popular feeling in the matter. Having attended to the chief objects of interest in Upper Thames-street, we now pass to Lower Thames-street, of which there is not so much to be said. The church of St. Magnus the Martyr was destroyed in the Great Fire, and rebuilt by Wren. This parish enjoys the distinction of numbering among its former rectors the name of Miles Coverdale, the great Reformer. The church of St. Botolph, Billingsgate, was burnt in the Great Fire, and was not rebuilt afterwards. Its name remains in Botolph-lane and wharf. Billingsgate was a market "for fish, both fresh and salt, shell-fishes, salt, oranges, onions, wheat, rye, and grains of divers sorts" in Elizabeth's reign, but by an Act of Parliament (10 & 11 William III., c. 24) it was made on and after May 10th, 1699, "a free and open market for all sorts of fish." In old times the sellers of fish took great interest in fast days, as they were good for their trade, and in 1571 the Company of Fishmongers petitioned Parliament against those butchers who killed and sold flesh during Lent, and complained of the non-observance of Lent "whereby the sale of fish and the encouragement to fisheries were greatly injured."

The present Custom-house was erected in the years 1814-17 from the designs of David Laing, and the Thames front is due to Sir Robert Smirke; but a Custom-house on the same site was "new built" by John Churchman, Sheriff of London, in 1385. A larger building was erected in the reign of Elizabeth, which was burnt in the Great Fire. The same disastrous fate attended the two Custom-houses that replaced this one, for Wren's was burnt in 1718 and Ripley's in 1814.

The Coal Exchange is a modern establishment, founded pursuant to an Act of Parliament passed in the 47th year of George III.'s reign. The present building, as our readers know, was designed by Mr. J. B. Bunning, and the first stone laid on December 14th, 1847. It was opened by the late Prince Consort on the 30th of October, 1849. In the basement are most interesting relics of Roman London, but few people go to look at them. Having now arrived at the east end of this famous street, we will close our notes with a short recapitulation. The whole history of ancient London was more or less connected with Thames-street, and when the city was small this street formed its entire southern boundary. Much, therefore, of the early history of England was enacted in its immediate neighbourhood. Thames-street was built upon in Roman times, and some remains of the villas pleasantly situated on the banks of the river, which were probably inhabited by the soldiers who were in command of the station, are still left. Stow reports a tradition that a large stone building at the east end of the street "was some time the lodging of the Princes of Wales, when they repaired to this city, and that therefore the street in that part is still called Petty Wales, which name remaineth there most commonly until this day, even as where the kings of Scotland used to be lodged betwixt Charing-cross and Whitehall: it is likewise called Scotland." Some kings have lived in the palaces on the river, and others have been entertained there; Old World merchants have done their business on the quays; watermen in large numbers have congregated by the various stairs, making the Thames resemble the canals of the Venice of to-day; poets and scholars have walked in the streets; and reformers have preached in the churches. The history of the place is not closed yet, and Upper and Lower Thames streets, now much altered, will be important streets as long as London remains the port of the world.

HISTORICAL MONUMENTS IN FRANCE.

WE have not been without noble illustrative works of our national monuments of architecture in this country, and certainly there has been no lack of "restoration" of these monuments, of one kind or another. But the work of illustration has been entirely that of private enterprise, and the work of conservation and restoration is left in the hands of local authorities, ecclesiastical or municipal, or to private care and liberality; and the feeling of the country on the subject (so far as "the House" represents the country) was apparent enough in the decided negative recently given to Sir John Lubbock's attempt to procure systematic governmental oversight of the monuments of antiquity in England. There is much to be said for private enterprise,—much to be urged against "bureaucracy,"—but the arguments in this direction look rather weak when we contemplate the result of intelligent official assistance and surveillance which is illustrated by the fine collection of architectural drawings in the International Exhibition, forming a small proportion of more than 8,000 drawings already executed, as careful memoranda or propositions for restorations, for the "Commission des Monuments Historiques" of France.

From the preface in the French catalogue we may abridge the history of this "Commission." Associating themselves with the movement which arose in the country about 1830, for paying more attention to archæological study, the Chambers voted for the first time, in the Budget of 1831, a sum of 80,000 francs, to be applied by the Minister of the Interior (who had previously only the power of applying at discretion occasional sums for the repair of certain structures) to the conservation of the architectural monuments of the country. At the same time an Inspector-General, M. Vitet, was appointed, whose duty it was to decide what edifices needed most immediate repair, and who, during the two years that he exercised his functions, "imprinted on archæological study a directing influence, of which the effects immediately make themselves felt in the Departments, where learned societies were formed which employed themselves in the search for monuments of interest, and in checking their spoliation." He was succeeded by M. Prosper Mérimée, who pushed the subject very energetically, and procured an increase of the Government vote, first to 120,000 francs, and then to 200,000 francs. Subsequently to this, the "Comité historique des Arts et Monuments," which had been instituted by M. Guizot in 1834, decided, on the suggestion of MM. Vitet and Mérimée, to undertake a systematic research with the view of forming an inventory of the "monumental riches" of France; every Department to be explored with great care by a competent archæologist charged to describe and to draw every monument of art. Public funds for so vast an enterprise were not forthcoming, however, and it was then decided to leave it to each Department to continue the publication of such drawings and descriptions after the Government model, and under the direction of MM. Mérimée and three others as an acting committee of *rédaction*. The Minister of the Interior, on his part, had in 1832 invited all the Prefects to state the situation of the principal churches in their respective departments, and to refuse authorisation to any important changes or reparations which had not received the approbation of the "Inspecteur-Général des Monuments historiques." In 1837, the period when the Government vote was raised to 200,000 francs, the "Commission des Monuments historiques" was first appointed under its present title, consisting of eight members under the presidency of M. Vatout, and including M. Mérimée (the Inspector-General), M. Duban, and others who would be capable of disposing of the funds in a thoroughly satisfactory manner. In 1839 the Government vote was raised to 400,000 francs, and the Commission re-organised, the Minister of the Interior becoming president *ex officio*, MM. Vitet and Mérimée vice-presidents, and five new members were added. The Commission now devoted itself to classifying and uniting under a system all the information hitherto obtained and then being obtained; appointing "corresponding inspectors" in each department, to furnish all information to the central body, and to assist the local officials in carrying out the objects of the Commission. With this systematic assistance the Commission were soon able to make their first classification of buildings which were of most importance, and thus to furnish a definite basis for the division and appropriation of the funds in their hands; these being, at that time especially, quite insufficient for all the work in hand, and being applied in preference to the restoration of those works which were types of a style, and which marked the progress or decadence of the art, "in order to preserve at least the models of all the systems which had been successively adopted by our architects." The vote was raised in 1842 to 600,000 francs; in 1848, to 800,000 francs; then to 870,000; and, in 1859, to 1,100,000 francs, at which point it has remained since. "The intelligence and activity which have presided over the labours of the Commission, and the apportionment of the funds, have received the approval of public opinion; the Chambers have not, therefore, hesitated to increase the resources of a service the importance of which was more and more appreciated, while under its direction certain edifices of great value, and which were supposed to be nearly ruined, have been restored for the study and the admiration of the public."

In 1848, 1852, and 1860 the Commission underwent sundry alterations. At the end of the year 1871 it was placed under the Minister of Public Instruction as official president, the acting president being M. Vitet, and the vice-presidents MM. St. Réné-Taillandier and Charles Blanc. The Commission at present numbers twenty-two members of Council, including a large proportion of architects, among whom we notice the names of MM. Viollet-le-Duc, Bailly, Labrouste, Millet, Questel, and others whose names are more or less known to most of our readers. M. Viollet-le-Duc *fils* is the secretary.

The sum of 1,100,000f., before referred to, is, we are told, but a portion of what is really spent under the direction of the Commission at present, *n'est q'un fonds de secours*. The voting of this sum annually serves to give the Commission a direct hold over the treatment of architectural monuments in the country; but the work going on at five buildings alone (the Church of St. Denis, the Sainte-Chapelle, the Hôtel-Cluny, the chapel of the Château at Vincennes, and Laon Cathedral) absorbs 400,000f. per annum. The Government adopts the principle, in many cases, of demanding the contributions of the local administrations as the condition of official assistance from head-quarters, and thus it comes to

pass that about three million francs per annum are at present expended under the direction of the Commission. Some of the observations towards the close of the preface (which bears the *imprimatur* of the Ministry of Public Instruction), as to the concomitant conditions and results of the work which is being carried out, are so much to the point, and so suggestive, that we shall make no apology for translating a few paragraphs in full:—

"In addition to the interest which attaches to the monuments of which the restoration has been undertaken, and which are thus saved from ruin, these works have had the result of forming in the departments clever and intelligent workmen, from whose numbers recruits are daily sought for the execution of work requiring care and skill. The works carried out in the restoring of historic monuments are, in fact, peculiarly fitted to form good artizans. By their nature they are very varied, and require a thorough acquaintance with different systems of construction and an entire forgetfulness of routine. Great constructions of a public nature generally go upon regular systems; one has only to deal with certain uniform data, imposed by programmes which vary but little, and methods of construction generally adopted in all building yards. On the contrary, in the repairing of historic monuments, the task of master and workman changes every day. They constantly encounter difficulties which stimulate their intelligence. The architect, forced to place himself in more direct communication with the building-yard, demands absolute precision, and can leave nothing to chance. The workman, on his part, far from being discouraged or rebuffed, becomes attached to and interested in his work, because it exercises his intelligence, and instructs him by the variety and extent of its forms of expression; and he knows that the building-yards (*chantiers*) are the centres from which the ablest workmen are looked for from all sides, and from which many of his brother workmen have gone forth to become master builders.

The greater portion of these restorations are undertaken in towns of mediocre importance; for in the great centres of population, either the ancient monuments have disappeared under newer constructions, or they have been preserved for public use and maintained by municipal subventions. This circumstance turns to the profit of our workmen. In a small town, they have nothing to distract them from their work; living is cheap, and they make a good profit out of their pay.

These restorations have besides the advantage of maintaining superiority of handiwork. Away from the great centres which attract artizans, and which possess important industries, such as fine-wrought ironwork, leadwork, ornamental glass, wall decoration, &c., there is great difficulty in finding clever hands; but in the localities where the 'Monuments' Commission has opened building yards, one may remark a very sensible improvement in the usages of the workmen of the district. Let us add that the architects charged with works of restoration in country districts, destitute of everything that is required, have often to re-open ancient quarries, and thus materials which had ceased to be used have come again into circulation.

Lastly, thanks to the works undertaken for the conservation of the monuments classed, comfort and well-being, and habits of administrative regularity, have been able to penetrate into abandoned localities. The opening of the building-yard brings with it the activity of the elements of instruction, and opens often sources of wealth hitherto ignored, by the working of quarries and the piercing of the necessary roads."

This, if not an over-coloured statement (and we know not why it should be), gives a very gratifying picture of work of a very elevated class, pursued in a right spirit, and with advantage to all concerned. Let us look now at some of the drawings which illustrate the architect's part in this extensive work. Thanks to the well-directed labours of her architects, we are informed in the catalogue, France can now show specimens of architecture of all the epochs from the farthest removed in her history to the best days of the Renaissance. Among the ancient works referred to, of the time of the occupation of "Gaul" by the Romans, we find here drawings of the Amphitheatre and Theatre of Arles, and the Pont Flavien at St. Chamas, with its pilastered archway at either extremity. We mentioned that the drawings exhibited here might be classed as "memoranda" as well as restorations. In most cases, in this collection, as far as we could observe, the designs for restoration, intended or executed, are accompanied by most minute and careful drawings of "*l'état actuel*," drawings which, even should the restoration be deferred, have their value as accurate records of the state of the edifice at the date at which they were taken. Next to "*architecture de l'antiquité*" is ranged "*architecture religieuse*." The venerable cathedral of Laon heads the list here, of which, however, only one drawing is shown of the west front as restored by M. Bœswillwald; in this case, the drawing of the actual state is wanting. The Government has for twenty years given 100,000 francs per annum for the repair and restoration of this grand and picturesque monument of Early Gothic. Passing over some others, we notice the splendid set of drawings by M. Ruprich-Robert, of the Église de la Trinité at Caen, of rather earlier date than Laon. The detail of the upper portion of the nave is a capital specimen of large-size detail drawing, and very interesting as an example of Romanesque Gothic; the blank windows of unequal width, and filled in with a hatched wall diaper, give a peculiar character to the design. M. Viollet-le-Duc's small perspective sketch of the Cloisters at Fontenay (twelfth century) shows a most effective grouping of the piers and shafts; the drawing is more like what we are accustomed to in England than most of those here. For in this collection the French system of architectural drawing, of large and carefully-tinted and shaded elevations, almost entirely prevails; there are comparatively few perspectives. A review of the drawings tends to the conclusion that the French system, fully carried out, has the advantage of showing in one drawing, to the educated eye, nearly all that a perspective and an elevation combined can give; the drawings are so effectively tinted, in regard to the distance of the several planes from the spectator, and on so precise a system, that the idea of solidity and of the relative distance of parts is almost completely conveyed, while the drawing is, of course, made rigidly to scale. The accuracy with which in some cases the tone and texture of the materials are given is such as we seldom see attempted in English architectural drawings, and which would, in fact, be stigmatised as waste of time by a large proportion of English draughtsman. It is impossible, however, not to admire such splendid finish in drawing as that shown in M. Bruyerre's drawings of the ancient church of St. Nectaire, where the tinting of every stone, the jointing of every course, seems to have received special study, and the drawing conveys the idea of being a perfect *vraisemblance* of the ancient building which it places before us. This structure, characterised in the catalogue as "*Monument de style Auvergnat pur*," is most remarkable in character, especially the east end with triapsidal *chevet*, with the low-pitched roofs of thick brown and orange-tinted tiles, and its frieze of ornamental wall-tiling round the central apse. It is just about to be restored; let us hope that "restoration" may be very respectful with so interesting a monument.*

THE NATIONAL GALLERY: THE POWER OF VARNISH AND GLAZING.

IT has not unfrequently been a puzzle with many fond of speculating on matters artistic as to which of the fine arts,—painting, sculpture, or architecture,—should have the first place. Sometimes it is one, sometimes another, according to the proclivities of the advocate; but one thing is certain, that, taking the public generally, the fine art of painting,—oil painting, perhaps, more especially,—is the most popular and attractive, and the most intelligible. A Gallery,—a National Gallery,—filled with noble examples of paintings in oil of historical and other subjects, is perhaps the best understood and appreciated of artistic displays; and the public will go again and again to it, when they will hardly do so to an *architectural* show, or even to one of pure sculpture. Such being the importance of a public picture gallery, it becomes a thing of no slight import to be quite sure as to what kind of pictures find their way into such a collection, where they come from, who painted them, whether they are genuine or spurious, originals or copies; and last, but not least, how far the processes of "cleaning," repairing, and restoration have been applied to them; how they are placed before the public, and in what kind of gallery; how lighted and warmed,—are also questions of no small importance. These are all of them, it must be confessed, at present open questions; and the how best to get over their several difficulties is a problem waiting for solution. A word or two just now about one or two of them may prove useful, and may be suggestive. No one, we think, can well go into our National Gallery of Pictures in Trafalgar-square without being a little startled at the display, and at the first impression made on the mind and the mind's eye. It is certainly unlike enough to the usual Royal Academy exhibition of oil paintings by our modern men. There is in it a subdued and sombre impression of colour, which most people naturally enough put down to the account of *age* in the pictures; but though the true causes lie much deeper than this, it serves for the moment to deepen the impression, and to make the Galleries all the more attractive. To comment with profit on all these "difficulties" in art would be impossible in a short notice, but there are one or two things which call specially for immediate attention, and it is comforting to know that at least one of them is now prominently before the public. We refer to the varnish question, and it is certainly not too soon that this is being discussed. It is really difficult to determine, on studying the contents of the National Gallery, where to begin the making things better than they are, and more easily intelligible, and more instructive; and to make more luminously visible the handwriting on the canvas surface. The varnish, we are told,—and all may see it,—so covers some of the pictures that they are all but perishing in a sort of Stygian fog! Would this were all, but it is not. Yet is the varnish question perhaps the very first thing that calls for attention. The mischief it has done in days past, and is even now doing,—to say nothing of "repairings" consequent on it,—is well-nigh infinite, if we look at the picture for the purpose of seeing the painter as well, and thus to rejoice in his power and skill of hand and mastery over materials.

A right curious subject is that of the power of *varnish*, and the effects it is capable of producing; hardly credible at times. It is not in *pictures* only that these effects are to be seen. The whole process of varnishing, and its manipulative difficulties, may be, truth to say, tested, and well tested too, on a smooth deal board. A little of a good thing is good, but too much of it is as bad, or worse, than none at all. It is to be feared that the tendency of the times is to despise common things, but in time we shall get over that tendency, and see things as they are. A piece of red pine, carefully planed, so as to show the grain of the wood, and the fine markings on it, is good to look at, but it is sometimes sought to make it better by deepening the tone of the surface colour, by passing over it a thin wash of dye. So far well. This is then covered over with a thin coat, when properly done, of varnish, thus to afford a transparent medium through which the delicately-marked wood may be seen. And this does not certainly injure it in any way; but let this varnishing process be repeated again and again, and it will be found that all, or nearly all, the natural colour, and, more than all, the *texture*, of the wood disappear, and the red-pine surface, instead of looking like wood, has all the appearance of some artificial substance, or patent composition. It is difficult to describe this appearance: it must be tested, and looked at. We commend this simple experiment to Mr. Robinson. It is most instructive, and will show in a simple way how baneful this varnish, even when it is good, is when there is too much of it. What, then, must the effect of it be in the case of a delicately-painted picture; and we are supposing a comparatively quiet and harmless process?

It would, indeed, be difficult to over-estimate the destructiveness of this varnishing, for there is one very special peculiarity about a collection of pictures which has not had its due share of attention; indeed, we had almost said it has received as yet hardly any at all. It is that a picture has always, to the artistic eye, as distinguished from that of the general public gaze, a twofold interest—the one which all more or less share, that of the presentment of some scene or other on a flat surface, through the media of form and colour. All understand and appreciate this; but there is one element in very high art-work which would seem to be for the artist's eye and perception alone. We mean the simple and *per se* painting of the picture; the manipulative work, the hand of the painter as seen at work in the picture-painting after, and long after, it is done. The power of painting. It is impossible to describe this; it must needs be seen, and when seen, appreciated and understood by a sort of instinct. It is here that the varnish question comes in and makes itself of the very last importance, for it is quite possible, by dint of varnishing, as we have said, to all but totally obliterate the evidence of this magnificent power of painting, and the very greatest work may through it be brought to nought. To those who can see this we would here specially call attention to the handling and mystery of colour and painting, not to be surpassed, to be found in the paintings of the great Venetian, Paul Veronese. We would specially point to one picture on the gallery walls,—the well-known "Consecration of St. Nicholas,"—where the painting of the figure in the right-hand corner of it shows simply,—not to waste words on mere eulogy,—what it really is to *paint*, and what the brush can do when in the hands of a consummate master of his craft!

But there is yet another hinderance to the really seeing into the merits, not to say the

* We will continue the subject in our next.

glories of the National Gallery pictures quite as killing, though not so harmful, in its own way, as the fatal varnish. It is the practice that has been adopted in so many cases of glazing, i.e., covering with plate glass, very many of the most precious pictures. Of course, it is well known what the motive is,—to *preserve* them from the dust, and perhaps it is thought the damp in the galleries. But we may ask in passing, does it really do this, effectually? We think decidedly not. But however this may be, it is almost fatal to the thorough seeing of the picture as it ought to be seen, and to its study, inasmuch as, stand where you will, it is absolutely impossible to see the whole of the picture at one view. You may get a view of first one corner, and then another, now the top of the picture, and now the bottom of it, and so on, and thus only you may get in time to see the whole of it, but only in detail, never all at once. It is truly perplexing, and not a little tantalising. One is perpetually wishing the picture in an auction-room, so that at least we might get good sight of it if but for a few moments. If any should doubt this, let them try to get sight comfortably of that great Titian, the Bacchus and Ariadne. It will be found a vain and hopeless attempt. You may see the pictures on the wall opposite, or yourself, or the passers by, or the skylight; but the great picture, except in parts, will be found to be an impossibility. Surely this is a mistake anyhow looked at. A picture that cannot be seen, from whatever cause, is as good as no picture at all. Cannot here a something be done to avoid the necessity, as it would seem, of this covering the pictures with glass? Would it not be a good plan to suspend silk blinds from the ceiling, such curtains to be drawn over the pictures when the galleries are closed, and when the dust suspended in the air, has time to deposit itself. And does not this point but too steadily to some defect in the very construction of a room, devoted to the exhibition of pictures. We cannot but think that it does, and that by careful construction of a building very much might be done to obviate the necessity of glazing the pictures at all. The doorways too, or openings, from one room or gallery into another, need some looking into, for in winter time,—we may mention in passing—such is the cold draught rushing through the doorway, awkwardly placed, between the two eastermost galleries, that it is almost impossible to look for any length of time at the great picture by Paul Veronese at the end of the long gallery. Might not this be amended at but little expense in some way?

And, again,—for it is difficult to leave the subject, so much depends on it. We cannot but hope that an opportunity may offer for a thorough and exhaustive trial, so as to evidence how far and how completely the successive coats of varnish can be removed from not a few of the national pictures. How glad we shall be to see them free of it, we need hardly say; and when free of it, we trust that they will be publicly exhibited before a single coat of even the best and purest of fresh varnish is passed over them. And still more fervently do we trust that in no case more than *one* single coat of varnish, whatever its nature, may be applied. Water-colour pictures, by the way, are not varnished; and why? It is felt by every painter that to do so would destroy a something or other; some subtle element in the drawing would either disappear, or at least be seriously damaged. Why, therefore, as matter of curiosity, we may ask, should oil pictures be varnished at all? It seems an infinite pity to do it. Many and many are the clever oil-sketches we have seen fresh from the hands of the painter, and no thought of varnish ever crossed such man's mind. What we want to see is, the *bond fide* work of the painter,—his subtle touch, and that nameless individualised manner of work which always must distinguish one man's work from another's. Varnish helps to obscure not a little of this.

We have often thought, and we take this opportunity to say it, what a useful thing it would be could but one of the rooms,—a small one would do,—of the Gallery be devoted to the exhibition of paintings in different stages of progress, from the cartoon or outline drawing in black and white, to the finished picture, or rather, two pictures; one without varnish, just as it left the easel of the painter; and then one with varnish, pure copal varnish, and but one coat of it,—a point, by the bye, of no small importance, and on which we could say a good deal from some special experience. Then it would be useful to show by the side of these one of those unfortunate pictures which have suffered most, and which have been all but, by dint of varnishing, blotted out of existence. A useful room, indeed, might this prove to be by showing how much mischief is done by the injudicious use of things, good in themselves, but only when used with knowledge and caution. We might here name the pictures as they now are in the Trafalgar-square Gallery, which would usefully go to make up this instructive picture show. Suppose, for example, that the fine cartoon, by Carracci, "The Cephalus and Aurora," occupied the first place, by way of showing the pure drawing stage, the realisation in outline of the idea of the picture. This drawing cannot be seen where it is in the dark passage. Then, an oil sketch, by some Venetian, without varnish, thus with all technicalities, and paintings clearly visible, without hindrance. Then a varnished picture, and then one under the "fog" of successive varnish coatings. One thing, at least, as we judge, would come of such picture show, very many might be led, wittingly, or unwittingly, to look always in a picture for the handwriting, the painting, of the painter, and varnishing and glazing might disappear together.

MR. WHISTLER'S EXHIBITION.

THE small gallery at No. 48, Pall-mall, where an artist of originality and genius as unquestionable as his eccentricity has collected some of his works, presents a pleasant "artist's-studio" appearance, with its crockery and painted screens, its furniture in plain but rich-toned brown covers, and its ranges of etchings and sketches in plain wood frames. Of oil paintings the collection is small, but includes one or two characteristic works, of which the best perhaps are the portrait of the artist's mother, known through its place in a recent Academy exhibition, and the portrait of a girl with a grey felt hat in her hand (5), under the title "Harmony in Grey and Green": this latter is a remarkably pleasing study of low quiet tones, and with considerable character in the figure. The sitting portrait of Carlyle, with the well-known crumpled hat on his knee, we should scarcely call a success in regard to character: the Chelsea prophet looks, to say truth, sadly like a methodist parson; about the last kind of person, probably, he would expect to be taken for. The two portraits of girls, Harmony "in Flesh-colour and Pink" and in "Grey and Peach colour" respectively (2 and 7), are too straight-up-and-down in pose and drawing to be really satisfactory, in spite of the unquestionable delicacy of the colour combinations. This objection does not apply to the "Arrangement in Black, No. 2" (3), in which the dark drapery is grandly designed in its flow and fall, and which only wants a somewhat more interesting countenance at the top of it to be a first-class specimen of art in portraiture. Of the small oil sketches, "Nocturnes" and "Symphonies" in "grey and gold" and in "blue and pink," &c., we fear it must be said that they are eccentricities, rather than contributions of much value to art.

Our own opinion is that Providence intended Mr. Whistler for an etcher; at least it is in this peculiarly *artist's* art that his success is most incontestable. The etchings about the Thames and its environments are pretty well known, and a good many of them are here exhibited. But it is more remarkable to see what freedom and effect the artist has attained, even in subjects of some intricacy, with that stiff and stubborn method of execution—the "dry-point." Look at No. 2 among the etchings, "The Forge," and see how thoroughly and intensely the expressions of the man working in the heat of the open furnace-door, and the youths craning their necks behind to look in, are given. A "Portrait" (25) of an apparently invalid lady of much beauty of countenance, leaning back in an easy chair, is exquisite in the delicate portrayal of the features and the contours of the bust and figure. The portrait of the "Little Girl" (36), by the same process, has remarkable freedom of pose and brightness of expression. Nothing can furnish more unquestionable evidence of artistic power than such works, where the ordinary resources of finish are denied to the artist, where he must know the meaning and object of every line he draws, and where correction is all but impossible. Among the etchings proper the small highly-finished "La Vielle aux Loquees" (8) is, in power of composition and light and shade, like a Rembrandt on a small scale; and of kindred excellence is the little work "La Marchande de Moutarde" (40: French, we observe, seems to be taking place as a kind of artists' language among us, and not unworthily), and the small interior called "Saverne" (26), a momentary incident of internal effect in a small room, with a female figure looking out of the window, which the artist has caught and turned to poetry, for whosoever has eyes to discern it. "The Parasol," "The Miser," and the "Old Farm" may be mentioned as showing genius and interest; the last-named is a masterly study of an old picturesque building.

Those who can see through the artist's whims and oddities into the spirit which underlies his designs, if they go once to the Gallery in Pall Mall East, are not unlikely to look in a second time.

A PROPOSED COLONNADE AND GALLERY UNDER THE EAST CLIFF, BRIGHTON.

A PLAN has been suggested to the inhabitants and the authorities of Brighton by Mr. William MacFarlane, an elderly but enterprising gentleman, and for many years an active resident in the town, for erecting a row of pillars from the Chain Pier to Kemp Town, nearly a mile in length, under the cliff, and connecting them by joists with the wall that has been built as a facing to the cliff, for the purpose of forming a flooring, on which it is proposed to raise a gallery with a glazed front towards the sea, to the height of the wall. The object of this is to supply the want of shade in summer, and of shelter in rainy weather, to promenaders on the New Lower-road from Kemp Town to the aquarium, the attempts which have been made to procure this by planting trees having failed, as they will not thrive. It is suggested that this scheme may be carried out with little or no expense to the ratepayers or inhabitants, on the condition that the capitalists who undertake the execution of it are permitted to profit by the gallery, either by letting it out to other parties for the exhibition and sale of useful and ornamental articles, or using it for those purposes themselves. The principle, if successful, might be made applicable to other places, both by the sea-shore and inland, where there is a similar want of accommodation, with a population sufficiently large and wealthy to reward the speculator.

DEFICIENCY OF WATER IN BERMONDSEY.

THE inhabitants of Bermondsey are apprehensive that should the present hot and dry weather continue much longer they will suffer seriously from an inadequate supply of water. Already several districts are almost entirely without water. These include the neighbourhoods of Grange-road, Blue Anchor-road, Jacob-street, Dockhead, and other localities. One gentleman, Mr. Hornblower, of the Conquering Hero public house, Upper Grange-road, complains that although he pays for a constant supply, he seldom gets any water at all in the daytime, and is under the necessity of using the most careful supervision in order to see that his tank is not run dry. There are several others in the same position, and they state that although they have written and complained to the company (the Southwark and Vauxhall) they are unable to obtain either relief or even a reply. Mr. Hornblower states that his neighbours are constantly coming to him for water, saying that they are altogether without. Mr. Jones, of the Claremont Arms, also in Upper Grange-road, makes a similar complaint, and likewise a third publican in the Blue Anchor-road, who states that people are continually begging water from him. Similar statements are also made by private residents who happen to have greater facilities for storage than their neighbours. It further appears that last week more particularly the supply was not only deficient but very inferior in quality; whilst another complaint is that when the water is turned on it does not remain so sufficiently long to allow the tanks and cisterns to get full.

The cause simply seems to be, as is admitted by the Southwark and Vauxhall Company themselves, that the capacity of the company's reservoirs, which were constructed when Bermondsey was not more than a quarter its present size, is altogether unequal to the demand; and what makes matters still more serious, it appears to be doubtful whether the new reservoirs

now in course of construction at Nunhead will be fully available for an additional supply for a period of some two or three years to come.

It appears, moreover, that the construction of many of the houses, and the course adopted by the landlords and builders, have something to do with the evils under which the inhabitants are at present suffering, and that the landlords are responsible for the imperfect sanitary condition, so far as regards the water supply, of many of the dwellings in the district. It seems that in several instances the water-butt is made to supply a plurality of houses, instead of there being a separate butt for each house, which ought to be imperative. As an instance of the extent to which this evil is carried, and of the mercenary character and indifference of some landlords to the health and comfort of their tenants, we may state that in a block of dwellings in Jacob-street, Dockhead, called Gutteridge's Buildings, eleven houses in the same court have only one small water-butt for their entire supply, and this butt is represented as being in a filthy and unwholesome condition. It is described as being in a horizontal position, with an opening on the top of only 8 in. square, for the ostensible purpose of allowing the butt to be cleaned; but the aperture is altogether useless for cleaning purposes, and it is stated that it has never been cleaned for several years past, and the tenants who have to drink the water assert that there must be several inches of mud at the bottom. The only wonder is that such a state of things has not before this been attended with an epidemic and a serious outbreak of sickness. The medical officer and sanitary authorities of the district might be usefully employed in making a tour of inspection in this locality.

THE LATE MR. JOHN GRANTHAM.

WE record, with regret, the death of Mr. J. Grantham, M. Inst. C.E., which took place on the 10th inst. Mr. Grantham has been long known as a consulting engineer and naval architect. He commenced his career in a large engineering establishment in Liverpool, where he afterwards practised in constructing iron ships, one of them, the *Sarah Sands*, which was designed and carried out under his directions, being then the largest sea-going iron vessel afloat. He was engaged in many large engineering works in the north of England, and was surveyor of steam-vessels under the Board of Trade. He subsequently left Liverpool and practised in London, where he was largely engaged. For the last four years he was much occupied in bringing to perfection his steam-car for tramways, which, at the time of his death, had just been taken up by some capitalists who propose working the patent. But he has been taken away just at the period when he might have reaped the reward of his labours and anxieties. He was a member of the council of the Institute of Naval Architects from its commencement, and he contributed several papers to the proceedings of that body, as well as to the Institution of Civil Engineers. He also published a treatise on iron ship building, which is a standard work on that subject. His loss will be much felt by those with whom he has been associated.

BILL FOR THE SALE OF GLEBE LANDS

THE following will be found a fair synopsis of the Bill for the sale of glebe lands introduced into the House of Lords by the Bishop of Carlisle.

If any person is desirous of purchasing any glebe lands, and the incumbent is willing to sell, an application can be made to the governors of Queen Anne's Bounty to authorise the sale, and if sanction be given, the governors in question shall direct the diocesan surveyor of dilapidations and glebe lands to report on the desirability of the sale and value of the lands.

If the governors are satisfied with the surveyor's report they may authorise the sale after the consent of the bishop and patron are obtained. A contract is next to be entered into, and for which a form in the schedule of the Bill may be used.

The provisions of 2 & 3 Vict., c. 49, s. 22, as to consent of patrons, shall be applicable.

The deed of conveyance is to be registered in the Diocesan Registrar's office, and Registrar's fees are to be paid.

The purchase-moneys are to be invested by the governors of Queen Anne's Bounty, and the income paid to the incumbent for the time being where the glebe lands were situate. By arrangement between the governors and the incumbent a portion of the income may be retained and accumulated, as an addition to the capital, and the residue paid to the incumbent.

The 39th & 40th Geo. III., cap. 98, not to prevent accumulations. Every ten years the incumbent may apply to the bishop to advise that the whole or part payment may be made to him, or any increased portion of the income.

Powers exercised by a bishop to be exercised by an archbishop in relation to his diocese.

The fees payable to the diocesan surveyors to be fixed under the Ecclesiastical Dilapidations Acts. Fees of other surveyors to be paid, and their expenses how to be obtained are set forth.

The Act is not to restrict existing powers of sale, nor to authorise sale of rectories or benefices.

ART-UNION OF LONDON PICTURES.

THE following are the chief works completing the list of selections by prizeholders this year:*—

From the Royal Academy.—My Legal Adviser, James Hayllar, 150*l.*; The Banks of the Thames—Cookham Meadows,—Ade Bréanski, 75*l.*; After the Ball, J. W. Ballantyne, 65*l.*; Sunshine and Shadow, J. C. Adams, 6*l.*; Petite Baie, St. Malo, Samuel Bird, 47*l.* 10*s.*; Kynance Cove, Cornwall, J. W. L. Ashe, 47*l.* 5*s.*; Gossip on the Road, Jas. Peel, 45*l.*; Grazing Grounds, Isle of Thanet, W. Luker, 40*l.*; Dutch Boats, C. Thorneley, 40*l.*; View near Reading, J. Thors, 35*l.*; Summer Morning on the Exe, T. O. Hume, 35*l.*; Porth Mendwy, Cardigan Bay, F. H. Christie, 30*l.*; Evening, J. S. Rawle, 30*l.*; Our Treasure, E. R. Taylor, 30*l.*; Autumn, J. M. Ferguson, 25*l.*; In Fairlight Glen, J. M. Barber, 25*l.*; Cutting Rushes in Surrey, W. S. Jay, 20*l.*

From the Society of British Artists.—The Fugitive, E. G. Girardot, 175*l.*; Trespassers, W. Luker, 87*l.* 12*s.*; Lynmouth, North Devon, E. A. Pettitt, 75*l.*; On the Thames, A. W. Williams, 45*l.*; Ruins of Dunbar Castle, J. J. Wilson, 45*l.*; Retrospection, T. Roberts, 40*l.*; On the Lowther, W. H. Foster, 40*l.*; Found, W. E. Marshall, 40*l.*; A View of Deepdene from Denbigh, F. F. Wainwright, 36*l.* 15*s.*; Small Beginnings, J. Gow, 35*l.*; Brittany Peasants, E. J. Cobbett, 35*l.*; Fortune in a Teacup, J. Cole, 35*l.*; The Singing Lesson, Edwin Roberts, 35*l.*; Harvest Mackerel in the Bay, G. S. Walters, 30*l.*; The Coast of Normandy, J. J. Wilson, 30*l.*; Spanish Gossip, J. Noble, 30*l.*; Dog and Rabbit, T. Earl, 25*l.*; In Borrowdale, near Rosthwaite, A. W. Williams, 25*l.*; A Present from the Fair, J. Noble, 25*l.*; Barden Towers, Wharfedale, J. P. Pettitt, 20*l.*; The Bargain, J. A. Fitzgerald, 20*l.*; The Village Ice-cart, G. A. Williams, 20*l.*; A Glen on the Grets, W. H. Foster, 20*l.*; Les Grandes Rocques, Guernsey, A. Helcke, 20*l.*; The Path through the Glen, E. Holmes, 20*l.*

From the Crystal Palace Picture-Gallery.—The Children's Pet, J. C. Thom, 75*l.*

From the Society of Painters in Water-Colours.—Hills of Corrie Baw, T. A. Richardson, 45*l.*; Lochiel, Argyleshire, A. P. Newton, 35*l.*; "As pensive I thought of my Love," J. D. Watson, 30*l.*; On the Lochy, Argyleshire, A. P. Newton, 25*l.*

From the Institute of Painters in Water-Colours.—A Rustic Holiday, H. Maplestone, 21*l.*; Kilchurn Castle, J. C. Reed, 20*l.*

From the General Exhibition of Water-Colour Drawings. The Still Pool, J. J. Curnock, 50*l.*

MANCHESTER SOCIETY OF ARCHITECTS.

IN the report for the year 1873-4, read at the annual meeting, June 22nd, already referred to, the Council of the Manchester Society of Architects speak as follows:—

"One of the most important matters that have engaged the attention of the Council during the year is the pressing the question of the consolidation of the Manchester Building Bye-laws on the notice of the City Authorities.

This subject was submitted to the Corporation during the last Session, 1872-3, but up to the present no steps seem to have been taken by the Corporation towards carrying out the suggestions contained in the documents presented by the Society. The Council have felt justified in again calling the attention of the City Authorities to the necessity for taking action in the matter. A letter from the Town Clerk on the subject will be laid before the meeting.

The Council have again felt it a duty to direct the attention of the Authorities to the character of certain new buildings erected in St. Ann's-square, which they considered were of a highly dangerous character, from the almost exclusive use of timber in the construction. The Council consider that this would, in the event of a fire, render it almost impossible to save the adjoining buildings. At present it seems that the Corporation have no jurisdiction over the constructive part of the buildings proposed to be erected; but this they would have if the suggestions of this Society in regard to Building Bye-laws were adopted.

The Council are glad to state that the operations of the Society are not only recognised, but approved, by the Profession in other towns. Communications have been received from the honorary secretaries of the Society of Architects in Leicester and in Bradford, and at their request copies of our papers have been forwarded to them.

The Council have felt called upon to protest against the course taken by the new Wardens of Manchester Cathedral, in placing the continuance of the restoration of the building in the hands of another architect, without in any way communicating with the gentleman under whose direction the work has been carried out for twenty-five years. The Wardens are, as you are aware, not in any way legally bound by the acts of their predecessors; therefore the Council could do *nothing* but protest against such a course. The explanation given by the Senior Warden, in reply, was to the effect that no reflection was intended upon the professional character of the former architect, but was in other respects, in the opinion of the Council, very unsatisfactory. The gentleman who has accepted the commission under these circumstances is not, the Council are glad to state, a member of the Society."

RAILWAY SUPERSTRUCTURES.

THE work under this title,* by Mr. Grover, is intended as a continuation of the author's previous work, "Estimates and Diagrams of Railway Bridges, Culverts, and Stations." The object of the work is to afford the engineer concise information in a portable form, to assist him in framing rapidly his reports and estimates, especially in regard to the probability of the employment of other (lighter) gauges than the present standard one of 4 ft. 8½ in. In the notes to each diagram the quantities, weights, and rolling and fixed loads are given in each case, so as to admit of estimates and comparisons being made with facility. The diagrams, which, without any pretension to high finish, are very accurately and carefully made out and figured, include details for ordinary bridges of various spans, calculated in some cases for mètre gauge, though in the majority for standard gauge; diagrams of iron girders for various spans; a general abutment diagram; timber bridges for straight and curved routes; gates, fencings, and other adjuncts of railway finishing work. An outline or model specification is appended, for "the works necessary for the construction of the A and B Railway," which will serve very useful purpose as a general memorandum in drawing up a specification, and may enable the engineer to turn over the specifying in general cases, and where there are no special difficulties, to subordinates, without fear of any necessary provision being overlooked. The table for rapidly computing amounts of earthworks, on the basis of rough sections of the site of the line, is calculated to save much time in making estimates, where the character of the work is tolerably similar over a large extent of line.

The diagrams given are taken mostly from works designed for actual execution, many of them having been carried out by the author and others. The iron-work is given with details and weights, so as to be practically available for manufacturers and contractors. The author believes that "the examples in this volume, taken with those already referred to in his preceding treatise, will cover those superstructures most generally required in actual practice in their primary forms."

Looking at it from an architect's point of view, it is noticeable into what effective and picturesque forms timber structures fall, even when designed on the most strictly economic and practical principles. Some of the timber viaducts shown here want very little to be objects of real beauty and interest. The same cannot be said of the iron structures. If it is possible to render iron railway bridges otherwise than hideous, the manner of accomplishing it has scarcely been hit upon as yet.

The Lion Cement Company.—The formal opening of the works of this company, which are situated at West Thurrock, near Grays, has been celebrated. The spot selected for the occasion was Parrock Hall, and the grounds attached were kindly thrown open by Mr. J. Lark, the original mover in the formation of the company.

* See p. 455, *ante*.

* Iron and Timber Railway Superstructures and General Works; with some Earthwork Tables and Outline of Specification and Requirements. By J. W. Grover, M. Inst. C.E. London and New York: E. & F. N. Spon.

SANITARY MATTERS.

The Sanitary Condition of Wolverhampton.—The town clerk has received from the Local Government Board a few copies of the report made to them by their inspector, Dr. Ballard, on the subject of his recent visit to this borough and the observations he made with reference to its sanitary condition, sewerage, &c. The report extends over twenty-nine pages of foolscap letter-press. The local *Chronicle* gives very full extracts from it. Amongst Dr. Ballard's recommendations he advises that the corporation should expend more money on sanitary inspection and medical superintendence; and that it is improper and unwise to leave old sewers still to be used after new and efficient sewers have been laid down; and that the proper drainage of courts, &c., should receive speedy attention, the water supply be improved, and the town wells closed.

The Taunton Sewerage.—The works for connecting the sewage of North Town with the general system are now rapidly approaching completion, and the sewage of that district, instead of being discharged at Firepool as in the past, will be intercepted by the new sewer in Grassgrove and carried to the main sewer in Priory. The eastern section of the work was completed first, and a gang of workmen have been employed in preparing for lowering the syphon which will convey the sewage under the river. This tube, constructed of ¼-in. iron in twelve plates, and weighing five tons, was brought up from the founder's,—Mr. T. Kerslake, of Exeter,—in two lengths, and when riveted together measures 100 ft.; the measurement of the diameter outside being 2 ft. 6 in. This new sewer has a fall of more than 4 ft., and ample provision is made for stoppage by the construction of a valve at the upper end and sumph holes at each end of the syphon. The old Firepool sewer will not be entirely disused, but will be utilised for storm overflow by the insertion of a weir at the point of intersection. No system has been adopted by the Local Board for disposing of the sewage when concentrated at the ground they have purchased,—Target Field,—but it is probable that the filtration plan of their surveyor, Mr. J. H. Smith, will be followed.

Sanitary Condition of Bilston.—We learn that the inhabitants of Hartshorn, Thompson, and Shale streets, in Bilston, being dissatisfied with the unhealthy condition in which these streets have been allowed to remain for many years past, have laid a petition before the Local Government Board, and invoked their assistance in removing the nuisance complained of, and improving the sanitary condition of the streets.

The Fever in Carlisle.—The local *Journal* reports a decided improvement in the health of the city, there being a perceptible decrease in the number of patients in both hospitals. The eighteen cases then in the hospitals were made up of twelve cases of typhus, three of typhoid, and three of scarlet fever. There had been no more deaths; and in regard to scarlet fever throughout the town, it is less prevalent now than it was a week or two ago.

BRISTOL CONGRESS OF THE BRITISH ARCHÆOLOGICAL ASSOCIATION.

THE proceedings of the Congress will include—Tuesday, August 4th, reception at the Council Chamber by the mayor and corporation; visit to the Church of St. Mary, Redcliff, under the guidance of Mr. Godwin, the Temple Church, St. John's Church, &c. Members of the Congress are invited by the president to the inaugural dinner given by him at the Royal Hotel; the president's address to follow. August 5th, the party will proceed to Clapton Church, Cadbury Camp, and Tickenham; then to luncheon at Nailsea; and afterwards to Backwell and Ashton. August 6th, the Congress will assemble at the Mayor's Chapel, and, after service, will attend the examination of the Cathedral and of its monastic buildings. The members are invited to an entertainment at the Merchant Venturers' Hall. The Association will then proceed to examine the Friaries and the Church formerly belonging to the Priory of St. James. August 7th, special train for Bradford-on-Avon. Under the guidance of Mr. C. E. Davis, F.S.A., the Congress will visit the Saxon Church at Bradford, the Parish Church, the Duke's House, and will proceed to Wraxhall House, and Chalfield. The Congress is invited to accept the hospitality of Mr. Buddle Atkinson. August 8th, Thornbury Castle and Church will be visited, under the guidance of Mr. Edward Roberts, F.S.A. After luncheon, to Iron Acton Cross; thence to view the Church, Manor House, and Camp at Sodbury, returning to Yate for the train to Bristol. August 10th, at 9.30 a.m., the special train will start for Worle Station, whence the Congress will proceed by carriage to the fortification on Worle Hill and to Woodspring Priory, returning to Weston-super-Mare for luncheon; afterwards they will proceed by train to Axbridge and Cheddar.

BATH ABBEY CHURCH RESTORATION.

As a memorial of the rector's liberality in the work of restoration, a new font has been placed in the church. On the completion of some minor details it will be formally presented to the rector. Sir Gilbert Scott designed the font, which has been executed by Messrs. Farmer & Brindley. It is of Painswick stone, standing upon an octagonal base of Rouge royal (red Belgium) marble, which is in two slabs only, being, in fact, the halves of one block, and highly polished. The upper portion of the font is square, with the corners cut off, and is supported by an octagonal panelled pillar having a moulded base. The sides have recessed panels filled with Gothic tracery, each side bearing in relief an emblem of one of the four evangelists,—an angel, lion, bull, or eagle. At the corners are detached octagonal pillars, with varied capitals, which support angels, emblematical of the four rivers of Paradise. Over the angels are enriched canopies, with tabernacle work, attaching them to the body of the font. Round the upper edge runs a moulding with enriched border. Inside the font is lined with lead. Among the recent additions to the Abbey we may mention two windows inserted in the north-east aisle. That nearest Orange Grove has been erected to the memory of Maria Anne Doveton, widow of Lieut.-Colonel Charles Edward Doveton, 38th Regiment Bengal Native Infantry. The main subject occupies the upper portion of the whole of the five lights, and is a representation of the miracle at the marriage-feast, in Cana of Galilee. The lower portions of the lights are filled with representations of Eve and her Children, Sarah and Isaac, Virgin and Child, Elizabeth and St. John, and Hannah with Samuel. The window is by Clayton & Bell. The other window is next to the organ, and has been erected to the memory of Mr. Benjamin Barrow Evans, of Cheltenham. It is illustrative of the Sermon on the Mount, the upper portions of the five lights being devoted to a general representation of its delivery, and therefore comprising the Saviour and his twelve disciples, besides several other figures. The lower portions, and the spaces above the main lights, are filled with subjects illustrating the beatitudes. Mr. Bell, of Bristol, was the artist.

CITY SLAUGHTER HOUSES.

SIR,—As the Government has determined to continue private slaughter-houses, we ask you, as well as the *Times*, to assist in getting rid of the nuisance in the City by letting the Government know through your pages what it entails in this neighbourhood, viz., Aldgate High-street, the south side of which is occupied by the trade, and which is the main eastern thoroughfare.

We have during the daytime cattle driven along the streets and across the footpath, and down the alleys (which also lead to numerous dwellings occupied by the poor) leaving their ordure on the pavement. We are constantly jostled by the slaughterers in their clothes begrimed with blood and filth. We meet the blood and offal as they are being conveyed across the footpath to the carts which come for them, and all the other concomitants of the trade.

Surely the Government should pause before it proceeds to continue this trade in the City, which, with other noxious trades, has had twenty years' notice to quit, and will otherwise expire by effluxion of time this year.

TWO CITIZENS.

The Proposed New Town-hall for Newbury.—A committee has been appointed by the town council to consider the most desirable course to be adopted with the view of securing the erection of a new Town-hall and Public Offices, the cost of which is likely to be about 10,000*l.*

EARTHWORKS OF THE ENGLISH PERIOD.*

MIDDLEHAM.

SCARCELY five minutes' walk southwards from Middleham Castle is a rather remarkable earthworth which has hitherto escaped critical notice. In the Inch Ordnance it is marked as a camp, but the scale is too small to allow any of its details to be shown.

The long low ridge that separates Coverdale from the dale of the Ure becomes lower and narrower as it passes eastward, until it finally ceases altogether about a mile short of the junction of the two rivers. A little above Middleham the ridge is known as the Low Moor, and is a celebrated training-ground for race-horses. Upon this ridge, at a point just east of the training-ground, where it is very narrow and not above 100 ft. above the town of Middleham, is seen the earthwork, which may be thus described:—A level space, nearly circular and about 75 ft. in diameter, is surrounded by a circular bank of earth about 7 ft. high above the contained area, but on its outer side passing down into a ditch, also circular, about 25 ft. to 30 ft. deep from the bank, and about 12 ft. below the ground beyond it. This bank, however, which during most of its length is a mere ridge, is towards the west expanded into a sort of platform or mound, about 20 ft. in diameter and tolerably level on the top. Beyond the ditch which surrounds this work, upon its counterscarp, is a second bank, lower than the inner one. The whole of this part of the earthwork is about 260 ft. diameter by 240 ft., the excess of breadth being due to the expanded inner bank.

Towards the east, opposite to the broad part, the bank is cut through and a causeway crosses the ditch showing that here was the entrance. On this side, covering therefore the entrance, is a semi-lunar enclosure, appended to the main enclosure and defended also by a bank and ditch. In the outer or eastern part of this, opposite to the inner entrance, is a second or outer passage formed in the same way.

A few yards in front of this second opening a slight bank and ditch are thrown for a few yards across the ridge, and in advance again of these is a further line of the same character, the object evidently being to protect the approach, which passed not through but parallel to these two outer defences. The design of the whole is simple, but not without skill, and when the earthworks were higher and duly armed with palisades the strength of the work would be considerable.

Although the appended drawing represents truly enough the general plan of this outwork, the representation is of far too precise and definite a character.

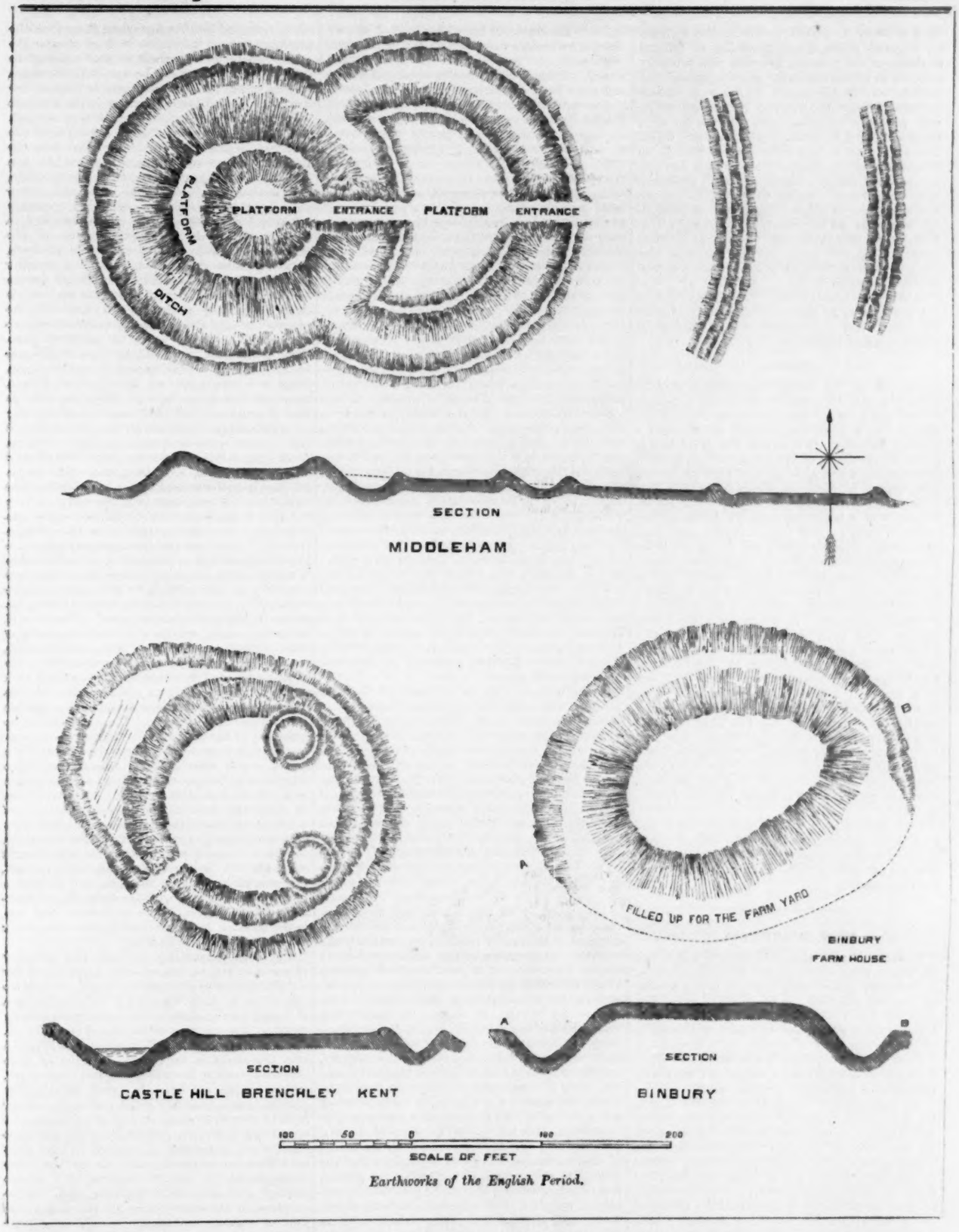
CASTLE HILL IN BRENCHLEY, COUNTY OF KENT.

In the county of Kent, the hundred and parish of Brenchley, about a couple of miles south of the Paddocks Wood Station of the South-Eastern Railway, a tract of high ground terminates eastwards in a narrow ridge, at the foot of which the Teise flows northwards to join the Medway a short distance above Teston. On the north slope of the ridge, a little below its crest and buried, most inconveniently for the visitor, in a chestnut copse, is the very interesting earthwork known as Castle Hill.

It is composed of a circular platform 200 ft. diameter, about 5 ft. above the adjoining ground, and rising round its edge is a bank of about 5 ft. more. This bank crests the scarp of a ditch, also circular in plan, which surrounds and protects the platform. This ditch towards the north is about 28 ft. broad and 15 ft. deep, below the edge of its scarp, but on the south side, where the rising ground exposed the work to an attack, it expands to 100 ft., is about 20 ft. deep, and contains water. The exterior face or counterscarp is about 5 ft. lower than the scarp, part of this depth being also due to a light crest or bank, from the outside of which the ground takes its natural slope, to the north downwards, to the south, after a little interval, upwards. The entrance was at the south-east quarter, and is indicated by a notch in the bank and a partial shallowing of the ditch. Elsewhere, save where it contains water and is marshy, the ditch is remarkably clean and sharp, having rather the aspect of a modern than—which it certainly is—of an ancient excavation.

There are to be seen at two points within the

* See p. 585, *ante*.



Earthworks of the English Period.

great circle, but upon its edges, two small circles composed of a mound of earth about 3 ft. high, containing a hollow centre about 20 ft. diameter. The entrance of each was through a cut in the bank, on the inner side. One of these rings is on the north and one on the west side. They appear to have been wigwams or rude habitations, possibly made by modern charcoal burners, probably by the original inhabitants of the work.

There is no trace of masonry and no tradition of any kind of building. The name indicates a military origin, but the work has no history. Hasted describes it as square, which it is not, and thinks it may have been the *Caput manorii* of Stockhill and Studmore. This it may have been, and yet,—what it has much the aspect of,—a Saxon or Early English fortified residence; one of those houses of timber defended by a ditch and palisade, of which they are traces all over England, and especially in the northern and western counties.

Hasted says there is in Brenchley parish another ditch of great width and depth, which once enclosed a building of great strength. He does not indicate its site, and the Ordnance map does not notice it.

BINBURY.

Binbury, also called Bingebury, about four miles from Maidstone, was noticed some years ago in the pages of the *Builder*. It is a complete and very remarkable earthwork, standing upon the high table-land of the chalk, in the parish of Thurnham. In the Ordnance map it is erroneously termed a barrow. It is a slightly oblong mound about 155 ft. across from east to west on its flat top, and 100 ft. in the opposite direction. Its sides are steep, and it is surrounded by a ditch, above the bottom of which, at its deepest, the platform is about 35 ft. high, and about 15 ft. above the surrounding ground. The whole work, ditch included, measured, when perfect, 300 ft., and 250 ft. upon its two diameters; but the southern part of the ditch has been filled up and encroached upon by an adjacent farmyard. The mound is wholly artificial, very regular, and with its ditch, when complete, it covered about an acre and a half; at present it is thickly wooded. There are no traces of outworks, and it is clear there has been no masonry

upon or about it. As the work is thrown up upon an elevated plain, where there are no natural advantages for defence, the site was probably selected as within the owner's private estate, and convenient for his lands. In this it differs materially from the camp at Thurnham, which was probably in great part the work of a tribe who lived by hunting and war, and therefore cared for an extensive view. Though in Thurnham parish, Binbury has always been an independent manor. At Domesday it probably, with Thurnham, belonged to Ralph Curbespine, the successor to Sbern Biga, who is thought by some to have resided here and contributed to its name. He was a large Kentish landowner in the reign of the Confessor, and likely enough to have had a house upon a mound of this character.

Binbury descended with Thurnham, and in the escheats of 12 Ed. II., Joan, widow of John de Northwode, was seized of the Manor of Thurnham and Bingebury.

HAWICK,

Appended to the above descriptions, may be given one of a work, also in earth, and a conical mound, but in other respects different, and intended for a civil or judicial, rather than a military purpose. It is called *The Mote*, and is placed in the skirts of the town, on high ground, commanding a fine view of the Vale of Teviot. The tongue of land on which it stands falls rather steeply and narrows towards the north. The Mote is a truncated cone of earth, wholly artificial, circular, 300 ft. round the base, and 30 ft. high. The top is flat, and about 20 ft. in diameter, and inconveniently steep for an ascent, save where some steps have been notched in its gravelly slope. It stands entirely alone, has no ditch or outwork, and is certainly not a military or domestic station. It might be a sepulchral barrow, only such a barrow would probably have been placed on the top of the hill. Besides this, the tradition of the district, which would naturally incline rather to call it a camp or a barrow, pronounces it to be a mote,—that is, a moot or place for the holding of a court, or for the administration or promulgation of laws, or, perhaps, sometimes, for the execution of justice. These works, found in Germany, in the valleys of the Rhine and Neckar, and not unknown in England and Scotland, are probably of northern, not of British, origin.

This mote stands within enclosed land, and near it are gardens, towards the soil of which it would form a tempting addition. It is hoped that the authorities of the town will take it under their protection. G. T. C.

1874.

PUBLIC AQUARIA.

I SHOULD like to have something to say on this important subject, which has been discussed, in a somewhat controversial manner, in the *Builder* of June 6th and 20th; in the *Field* of June 27th, July 4th and 11th, 1874; and in the *Times* of October 24th, 1872; and as I have had upwards of twenty-one years of experience in the matter, I think that a temperate and truthful statement from me should have some weight, if I write with reference to unalterable physical laws.

An aquarium, of whatever dimensions it may be, is an arrangement by means of which certain animals, marine and fresh-water, of kinds which do not breathe by lungs (lung-breathers are inadmissible in aquaria, as they, whether aquatic or not, only take up air, not from the water, but from the atmosphere direct), but which respire by gills or otherwise, and extract the air which decarbonises their blood or other circulating fluid, from the free air contained in the water, which water derives this air from the ordinary atmosphere in contact with it. The purifying process is further aided by living vegetation growing in and below the surface of the water, the plants appropriating to their own substance the carbon which the animals evolve by their breathing and other emanations; or, in other words, these plants decompose the poisonous carbonic acid gas given out from the animals, it being divided into *carbon*, which the vegetation employs and takes up, and into *oxygen*, which the animals use, and thus we set up a beautiful circle of life, animal and vegetable, one depending on the other. The water in which these reciprocities are conducted is a combination of oxygen and hydrogen, and in an absolutely pure state it has no power whatever to sustain animal life: it is only a medium for the presentation to the creatures breathing in it of the air which does sustain existence so far as the vital process of the revivification of blood is concerned. Therefore as in nature we almost always find some form of animal life in water, so we also never find water in a state of nature in an absolutely pure condition: it always contains air, which the creatures in it and living below its surface, are engaged in extracting from it. Moreover, water has a much greater affinity for the oxygen which our atmosphere is composed of than it has for the nitrogen, which also, and more largely, enters into its composition; and as these two gases exist in our atmosphere in a state of mechanical mixture, and not, as water contains oxygen and hydrogen, in a condition of chemical combination, the water is free to select more of the one gas than of the other, and it does so select and absorb it, to the advantage of the animals, which is a very wise arrangement. Now, as water is a substance which is decomposed with but great difficulty and slowness, there must be a reason for that, and the reason is that there is no change of water in nature,—no change in the sense of its being destroyed or converted into its primary elements, in any appreciable degree. In the ocean, for example, we have had the same unchanged water for ages upon ages, being kept merely flowing backwards and forwards and up and down by the forces made for that purpose. Some of it evaporates and rises, in the form of saltless aqueous vapour, or much comminuted water, in the shape of clouds, which discharge their contents on the sea or on the land, and if, when it falls on the latter as rain, the fresh water returns to the sea as rivers or brooks, and thus the ocean gets its own again. And in the same way rivers, ponds, lakes, and all other conditions of fresh water, are only changing, as far as change of place is concerned, and as far as there is a change from or to various degrees of combination with saline or other foreign matters; but there is no appreciable change into the primary, chemical, or elemental constituents of water.

These things being so in nature, it is quite possible and easy to reproduce them, as to general condition, in an artificial state. We get a tank or other receptacle; we fill it with water (sea or fresh water); we expose it to light; the light acts upon invisible germs of plants contained in the water or air, or both, and produces visible plants; we introduce animals, which, if fed, and if of right kinds, numbers, and sizes, live healthily, because of the air in the water, and because of the presence of growing vegetation. The water evaporates and becomes less, and we then restore it to its normal quantity by the addition of, if sea-water, more fresh water, as the saline parts do not evaporate. All goes on prosperously in this unchanged water, because we do what nature does, and we call the thing an *aquarium*. That is to say, health in the animals and clearness in the water continue so long as the amount of animal life is not in excess of the air which the water can absorb by passive surface contact, or, when that surface is increased by motion, to decompose the various emanations of the animals. But if, as very often happens, there is an excess of animal life present, the water becomes turbid and unsightly, and the creatures suffer, become unhealthy, and die. One of two remedial things has then to be done: the amount of life must be lessened, or the aëration of the water must be increased in some way. It is a law that the capacity of water for absorbing air depends mainly on the extent of the surface of the water exposed to that air. Thus, if we take a cubic foot of water, and place it in a vessel measuring 12 in. in length, breadth, and height, we get a given absorbing surface, which, however, is doubled if the same bulk of water is placed in a vessel measuring 24 in. long, 12 in. broad, and 6 in. high, as the capacity of the water for sustaining animal life, as far as aëration is concerned, is increased in the same proportion, if the temperature is equal in both cases. But the most obvious mode of increasing the aëration is by adding more water, throwing away, wholly or partially, that which has been used for the animals, and which has become fouled by them. This may be performed either intermittently, as is rudely done when gold-fish are kept in a glass globe, or constantly, as when a current of good and clear water runs through a tank, whereby the air-absorbing surface is infinitely extended. But, unfortunately, we cannot always, nor, indeed, often, obtain for our aquaria water for this purpose in a sufficient quantity, and in clear and otherwise good condition. Thus, if at Brighton water were incessantly pumped into the aquarium there from the adjoining sea, so turbid as it is at or near the shore, the tanks also would be nearly always so turbid that nothing could be seen in them, which may be of but small consequence in the sea, but it is much in an aquarium, where animals cannot leave the inconveniences to which they are put. And if at the Crystal Palace a stream of the best fresh water there obtainable (that from the Lambeth Waterworks) be permitted to run through an experimental tank recently made, and containing fresh-water fish and other animals, they would be, and are, quickly killed by being poisoned with that water, and, in addition, there is the great expense of the stream, and also its turbidness in some weathers, as after heavy rains. We, however, remember that water which has been rendered unfit for use by the presence of decaying organic matters, is only temporarily poisoned, and that if it be exposed to air, these organic matters become dissipated, and the water is rendered pure. This is the case, as we all know, with Thames water in ships' drinking-water casks at sea. Thus the sea-water at the Crystal Palace, obtained four years ago at Brighton, was at first discoloured and foul, and in every way unfit for animals to live in it, but, by keeping, it has become pure and clear, as it is now seen, constantly running into the tanks in streams which are bright, sparkling, and cold,—so refreshingly cool and healthy for the animals, that in summer the temperature of the water on very hot days is so much as thirty degrees of Fahrenheit below that of the maximum true temperature of the external air when local influences are eliminated; thus presenting to the creatures a temperature the same as that which they get in the sea at such periods.* And in like manner the Lambeth fresh water, in course of time, becomes fit for animal respiration. Therefore if, in an aquarium, we have a sufficient bulk of such purified water in store in a great reservoir, we can draw on it cheaply and constantly for the show-tanks, and let it run back again from tank to tank, and finally into the reservoir, without any deterioration whatever, as it is oxygenated at every step of its progress. The water cannot be poisoned, as has been stated, "so that the poisoning of one tank would affect the whole of the water in the other tanks," because there is no inorganic poison present, and any organic poison is neutralised as fast or faster than it forms, so that the fluid is as good at the end of a long circuit as at the beginning. It is evident that the larger is the capacity of the reservoir, the more in quantity is the water we have to work with, and the better the animals are; in fact, the reservoir, if large enough, and if drawn upon quickly enough, so completely counterbalances all tendencies to turbidness and unhealthiness in the show-tanks, that the water never even requires filtering.

By these means we multiply the quantity of water to any extent, which is limited only by the dimensions of the reservoir; and, so long as the water is maintained in a certain condition of temperature and aëration, we correspondingly increase the chances of health of the animals. Then the mode in which the water is injected into the tanks is important, as some of it is thrown in—in the form of a fine and forcible jet, which carries air into the water so minutely divided that excessively small and slowly-rising bubbles permeate every part of every tank, and the surface of water exposed to air is thereby most enormously increased. The fluid is thus kept saturated, so to speak, with air by the same arrangement of minute division to increase contact and absorbing surfaces that nature employs in the construction of the lungs and gills of animals, and every particle of decomposing organic matter (animal and vegetable) is by these means taken up without any manual cleaning being necessary, and is quickly rendered harmless, the result being regulated by the speed of the machinery.† The

* July 9th, 1874.

Maximum external air in shade at Greenwich and Sydenham	92°	Fahr.
Maximum in shade interior of Crystal Palace (mean of six situations)	84°	,,
Maximum in shade, interior of Crystal Palace aquarium	77°	,,
Maximum in water of Crystal Palace aquarium (all tanks)	61°	,,

† Thus, on a sudden accession of organic matter, the speed of the circulating apparatus may have to be accelerated so that the greater part of water in the system may be in a state of the utmost effervescence, many millions of minute air-bubbles being formed in the fluid every instant. For example, from ten to fifty quarts of shrimps may be brought as food for the codfish, wrasse,

water in an aquarium has thus a defined limit of bulk, and, being indestructible, it need not be changed: we have need only to change or renew the air in it, by bringing the water into sufficient contact with our limitless and inexhaustible atmospheric air, just as when a closed room has its air vitiated by the breathing of human and other lunged animals in it, we change that bad air, or dilute it with good air, by opening windows or doors, or by other means of ventilation, and thus we bring the deteriorated and limited atmosphere within the room into active contact with the boundless and healthy atmosphere without it, which atmosphere is assisted in its purity by the peristence of terrestrial vegetation in growing nearly everywhere. This necessary ventilating operation, so familiar to all of us, is precisely analogous to what is done in an aquarium on the circulatory principle, and it is not done in one on the non-circulatory system. Most of us, however, are not familiar with aquaria, and hence we make expensive errors, as at Brighton.

There is another thing. Water, and especially sea water, into which light is admitted, has a strong tendency to cause the growth of vegetation in it, and if the light be long continued the water becomes darkly and opaquely green from the presence of innumerable microscopic, locomotive, ciliated spores, or seeds, of vegetation, each of about 1-2,000th of an inch in diameter. The only known mode of obviating this very great difficulty is by placing the water, or some of it, in the dark, thus reversing results by reversing conditions. Messrs. Negretti & Zambra, of the Crystal Palace, have just published a remarkable photograph illustrating this principle. Therefore, in an aquarium where there is a sufficiently large dark reservoir, this very serious evil is never felt as it has been felt at Brighton and elsewhere, because the water is incessantly passing into darkness, and the spores are thereby hindered from visibly accumulating. This system has been termed the circulating system, and no better one for aquaria is known.

At the Brighton aquarium there are none of these refinements, though it is fair to say that they were at first attempted to be there carried out, but they were abandoned from want of experience as to their necessity. When new sea-water is required in any of the show-tanks at Brighton, it is pumped from the sea into some reservoirs, and is there left to settle; but it is reported that the reservoirs leak badly, and so the water cannot remain in them long. Then it is pumped into the show-tanks in quantities varying as to their apparent necessity, and left to settle again. Or it is pumped direct from the sea into the tanks without the intervention of any reservoirs. As much of the turbidness of the water is due to carbonate of lime in suspension, washed from the adjoining chalky cliffs, the water is further cleared by the introduction of oysters, and these, being very hardy, live, in spite of adverse conditions, and give out much carbonic acid gas which by its excess converts the carbonate into a bicarbonate. But after these oysters have thus done serviceable work, they immediately begin to undo it, by again converting the bicarbonate into a carbonate. Such small mechanical aëration or extension of absorbing surface that the water in the Brighton tanks receives, is given to it on an old and exploded system invented twenty years ago by the late Dr. R. Ball, of Dublin, by a stream of air driven by a fan urged by a steam-engine, the air-pipes being passed through the water, and opening near the base of the tanks. The air then passes up through the water in large bubbles, and rapidly; but the greatness of such bubbles exposes but a very small relative surface of water to the air they contain, while the quickness with which they rise (in consequence of their large size) does not give them time, in the larger tanks especially, to aërate much more than the column of water they pass through. This certainly is motion, but it is such a disadvantageous form of motion as to be worth next to nothing, and it indeed is a very wasteful expenditure of the power which might be far better employed in pumping *water* instead of *air*, and in so gaining all the advantages of the circulatory system. There is, in fact, no continuous *circulation* at all: it is only a partial *agitation* or oscillation, and it would be more advantageous if the motive power were employed even in turning a small paddle-wheel, or, still better, a partially-immersed screw, in every tank, as then there would be something more like a thorough circulation, and a presentation of successive surfaces to air; yet, even then, the great benefits of the more perfect system, with its large water volume, would not be gained, and especially there would be no counteraction to the tendency to excessive vegetation. The only shadow of a shade of an advantage said to be gained by the Brighton system is, that when a large number of eggs of minute size are extruded by any animal, and when these eggs or the young creatures hatched from them are washed down into the dark reservoir, as of the Crystal Palace aquarium, by the currents of water, they are there lost to observation. But when, as in the case of codfish, lobsters, crabs, and many other forms of marine animal life, the young ones or the eggs they come from are very small and very numerous, in comparison with the dimensions of the parents, they are never reared in any aquarium, but all speedily die, probably from want of sufficient and proper food; so that it is of no great consequence whether they die in the show-tanks or in the reservoir, but if it be desired to watch their progress for a time, a little mechanical arrangement will enable such eggs or young creatures to be arrested from entering the reservoir without arresting the current. This was recently done when some codfish spawned in the Crystal Palace aquarium.

The water circulation at the Crystal Palace is incessant, day and night, the machinery, boilers, engines, and pumps being all in duplicate, so that one set may be in readiness in case of the accidental stoppage of the other set. Once a year, however, there is a stoppage of six hours' duration to clean a flue, and the time for doing this is carefully chosen in reference to cool weather, and good condition of the collection. During these few hours all the assistants anxiously watch the tanks, and agitate and aërate the water in them wherever animals begin to be distressed, as some are sure to be.

By way of depreciating this circulating system, it has been foolishly asked:—Where in nature do we find sea-water or fresh water lifted up by pumps and pipes, and then by other pipes discharged into tanks, and from them to run away to be again so circulated? The answer to this is that in the sea the water is being continually dashed against rocks or lifted into waves by winds and streams, and that it is driven downwards in its fall so as to carry a great quantity of air with it, and that this operation is very closely and successfully represented by the system now advocated. But of course it is not necessary or possible to copy the operations of nature by the use of the same prime motor. We in such things never should endeavour to *imitate*, but only try to *represent* the application of the same general principles.

Thus at Brighton the general plan is that of allowing an evil to accumulate, and to endeavour to remove it periodically, wholly or in part; while the better system obviously is that which continuously *prevents* the evil from being accumulated at all, as at the Crystal Palace. Speaking for myself, I have never seen all, or nearly all, the tanks at Brighton in a clear state at any one period, though I have visited the place many times. The only clear tanks have been those where there were, in my opinion, but a very small proportion of animals compared with the amount of water in which they were kept, and in comparison with the expense of construction.

It would be very difficult for any outsider to ascertain the accurate death-rate of the various kinds of animals in the Brighton establishment, and that being the case it would be unjust to merely assume it is large, even with the knowledge of the great ease with which deaths can be concealed, and fishes and other creatures quickly re-supplied from the sea near at hand, that method being *possibly* resorted to. It must also, in fairness, be admitted that there exist there copious growths of fixed animals, as sponges and some of the molluscoids, as *Ascidia* and *Botryllus*, which come in a quasi-spontaneous manner there and in many other inefficiently aërated aquaria. But these sedentary animals are alone no test: and *with them* in an efficient aquarium should be associated the echinodermata and the creatures above them breathing by gills, and these latter are, in proportion to the water space, lamentably deficient, as to number and variety, at Brighton. It has been said that sea-water which is long used unchanged in inland places becomes "stale," and is deprived of nutriment for the animals which in the sea it contains in suspension, and that when, as at Brighton and other seaside aquaria, new sea-water can be occasionally pumped into the tanks direct from the sea, it is advantageous to do so, even at some sacrifice of the clearness of the water. This reasoning, however, only *seems* plausible, and it is in reality only an endeavour to make a virtue out of a necessity, arising from a mistake in adopting an erroneous mode of operation. If the vague word "stale" means that water containing a certain proportion of living plants and animals can become deteriorated if it be sufficiently oxygenated,—then that is impossible, no matter how long it may be used unchanged. And as to the supposed deprivation of floating food, that is also impossible, because it is continually, everywhere,—in all places at the sea and inland,—making its appearance in every aquarium in the form of innumerable multitudes of microscopic living organisms, animal and vegetable, on which some of the creatures feed. It is true that in some seas where the water is very pure and clear, and contains suspended food desirable for the animals in an adjoining aquarium, such food might, with proper precautions, be conveniently obtained for the aquarium by pumping it up into the tanks; but I have repeatedly examined turbid water from the Brighton tanks, and have found that the turbidness was due to the presence of sewage-matter and chalk, which of course no animal consumes. Certainly, if such water is not *too much* overcharged with such substances, it might, if cool, and if briskly pumped into the comparatively stagnant Brighton tanks, revivify the animals when they are partially exhausted by being kept on the non-circulatory system, and even this shows how valueless that system is. When in the Brighton aquarium the eggs of salmon and trout are successfully hatched-out, they are placed in a small apparatus made on the circulatory system with the water running from one trough to another, and thus is adopted in a contradictory manner the plan so much and so unreasonably objected to for other objects. This clearly shows that if the entire place could be easily and inexpensively changed into the circulatory system, the latter would be chosen. But, as it is, an error has been made in the original construction, and now this is sought to be made the best of, by saying that the wrong way is better than the right one.

And this is the final upshot of the whole matter: the general biological results are so inconsiderable in proportion to the size of the place and its money cost of construction and of maintenance, that any one having more special experience might have got twice the present Brighton biological results out of half the Brighton expenditure of about 100,000*l*. The poorness of outcome is because the place was not devised and carried out by a naturalist having sufficient acquaintance with physical laws to secure "*the greatest happiness of the greatest number*" *of animals at the smallest cost, so as to earn the*

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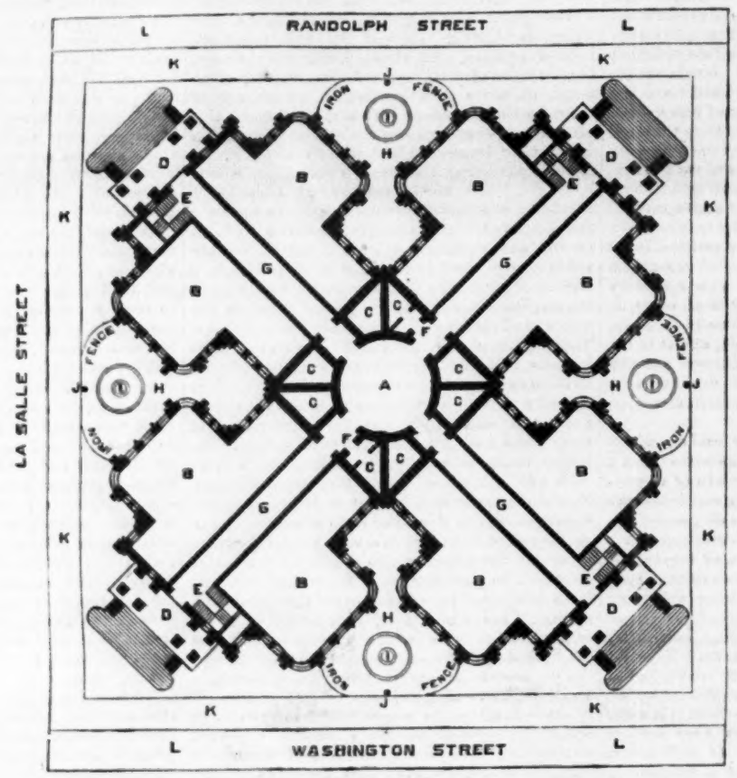
and some other fish, and to last them three or four days. From five to fifty per cent. of these shrimps may be dead on arrival, and the remainder are in a more or less strong condition, according to weather and other circumstances. But it is impossible to spare so much time as would be needed for a manual picking out of the dead from the living, and therefore the whole are thrown into one of the private reserve tanks, which forms the highest point of a series of from six to a dozen or more of similar tanks, descending from one to another like steps. The dead shrimps at once fall down to the bottom of the first tank, and there remain till removed, while the living ones swim out with the stream at the overflow into the next tank, and from that to the following one, and so on in succession to the last or lowest tank, where they are finally arrested, and it is found that the strongest have swum furthest, and that the intermediate tanks contain shrimps in various stages of strength. But this process of "natural selection," and "the survival of the fittest" of the shrimps, takes a long time, usually all night; and during this period, if the oxygenation of the water were not increased by increasing the speed of the machinery to meet the demand thrown upon the water, or rather upon the free air in it, by the presence of so many rapidly decomposing organisms as those which usually die, the whole of the water in the establishment would be made turbid and unhealthy. It is the same with the crabs which are obtained as food for the cuttles, *Octopus* and *Eledone*, which they demand to have given them alive and well. Several pecks of such crabs have to be kept and fed in the reserve tanks, to be gradually taken out and used as food over a period of some weeks, and again the speed of the circulation is modified to meet their varying requirements, in addition to those of the show inhabitants of the aquarium seen in public. It is the same with mussels and oysters, large quantities of which are sometimes preserved alive in the reserve tanks till the moment they are cut up and used, and when they are so used their flesh gives a milkiness to the water at the places where it is dropped, but which is immediately diffused and got rid of by the rapidly-entering streams of water and air. So too it is with the vegetable food which is kept in these reserve tanks in considerable quantities for some animals. It is necessary to keep all such food, whether animal or vegetable, in a perfectly healthy condition till it is required to be eaten, by the administration of air to the water containing the food, and in a degree varying with the varying amount of such food. But this cannot be done efficiently in aquaria where there are no streams of water, or where aëration is attempted to be performed by the entrance of air-bubbles only, as at Brighton.



PROPOSED COURT HOUSE AND CITY HALL, CHICAGO.—*Block Plan.*

A. Rotunda.
B. Offices.
C. Vaults around dome.
D. Portico and entrances.
E. Staircases.
F. Elevators.
G. Corridors.
H. Parks.
I. Fountains.
J. Drinking-fountains.
K. Side-walks.
L. Proposed hack-stands on Randolph and Washington streets.

greatest money result for the shareholders. These two dozen last words,—seven by Malthus and seventeen by me,—really express in the smallest space the objects of such an institution, or any other aquarium intended to be commercially successful. Many public aquaria are now being erected, or are in contemplation, in various parts of the world; but not one imitates the Brighton system, save in the one begun to be made at Scarborough, where naturally the proportionate ends attained must also be insignificant, of course always remembering the money cost. It would be impossible, or very difficult at a paying rate, I am sure, for the Brighton aquarium to exist inland, as the system is so defective, because, as explained, it lacks independence from external sources of disturbance. To satisfy me, an entire modification of its construction would be necessary. In such a thing as an aquarium, the best system is the best anywhere, whether near the sea or not. The value, indeed, of having a marine aquarium by the seaside is the saving of the cost of carriage of some of the animals; the saving of some risk to their lives and health in such transit when it is long; and the saving of the expense of the first supply of seawater, which supply, once obtained, should be used incessantly without change, only the air in it being changed. One hundred thousand gallons of seawater delivered at Birmingham would cost about 700*l.* or 800*l.* It is of no matter what the dimensions are of an aquarium. Size, indeed, does not alter principles, and no scientific man would take advantage of mere amplification as being a benefit or a deterioration to a thing, without carefully giving his reasons why.

This discussion is no new thing, and when the matter was some years ago referred to the opinion of the late great chemist and physicist, Baron Justus von Liebig, he gave judgment on it in a written document which has just been reproduced in facsimile by Mr. E. J. Francis by his photo-chromolith process; and I shall be glad to send gratuitously one of the hundred copies I possess, to any one who is interested in this matter, involving, as it does, in these days of numerous public aquaria, applications of the principles which regulate the right or wrong expenditure of very many thousands of pounds of money. The question is not whether so-and-so has been done, somehow, and with a large sum of money, but it is whether it has been done as scientifically and economically as it might be effected in reference to cost of making and maintenance. The outside general public have so little natural-history knowledge, that they and others who have to provide the money for such things cannot judge of this unaided.

Since the foregoing was written, there has appeared, on July 11th, 1874, in the weekly newspaper, *Land and Water*, which may be accepted as the avowed London organ of the Brighton aquarium, an account of some recently diseased fish in the Round Pond, Kensington Gardens, London, in which the mischief is attributed to the almost entire cessation of a stream caused by the stoppage of a pipe, and by inference, to the high temperature of the water, which it acquired in consequence of the cessation of the current; and it is added that when the stream was set flowing, and the pond was thus brought by it into contact with a greater mass of cool fluid somewhere else, the temperature of the whole was much lowered, and this stream, thus giving oxygen and clearing away the decomposing organic matter which the pond contained, caused the fish to be immediately better. It is also stated that the instinct of the fish so led them to know what they needed that they actually crowded in dense masses around the mouth of the submerged pipe from whence proceeded only a small trickle of water, and that they even got into the pipe to gain all the good possible from the running water.

W. A. LLOYD.

Crystal Palace.

PROPOSED CITY HALL, CHICAGO.

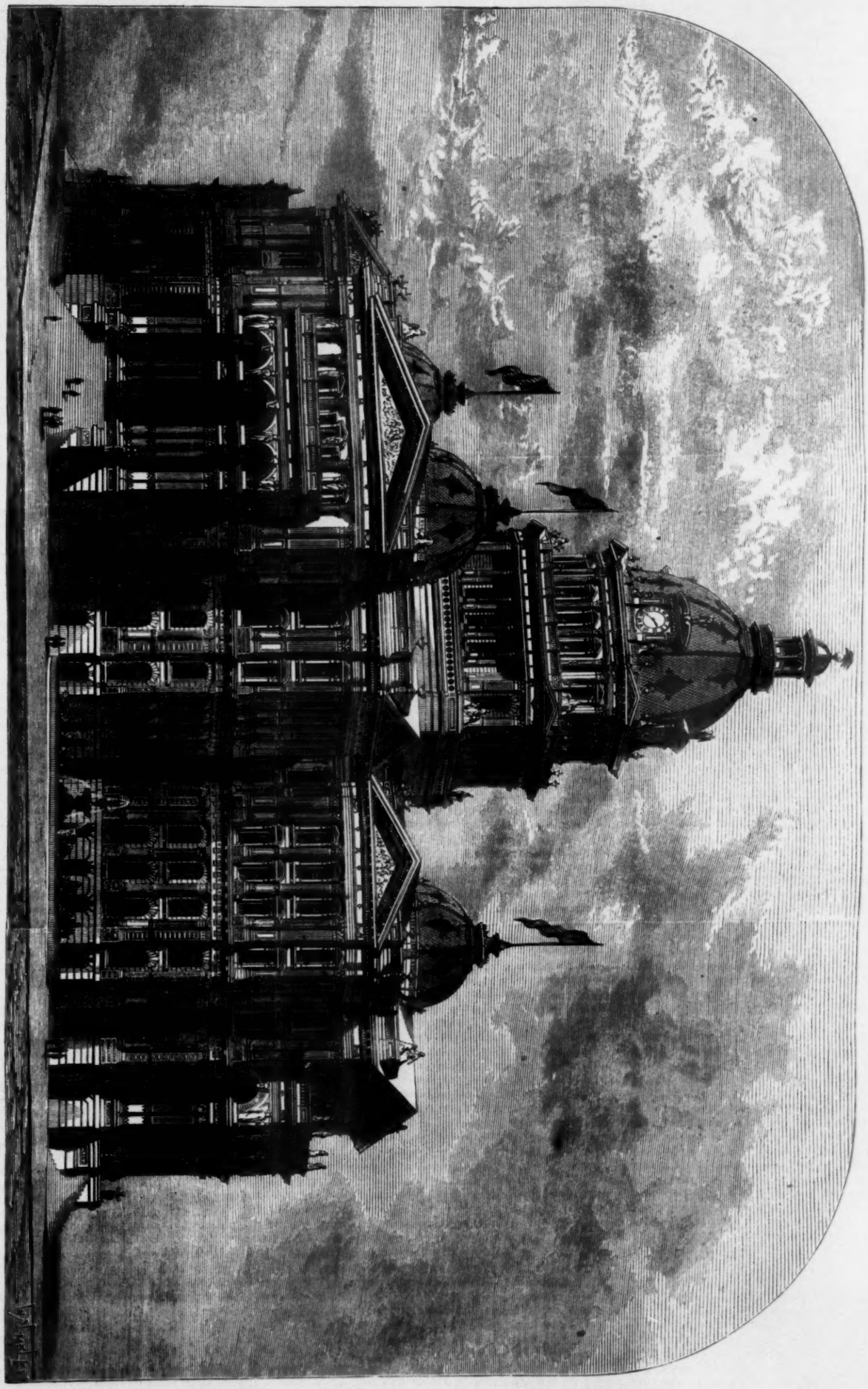
ANOTHER destructive fire has brought Chicago again under notice. But if they burn down there they also build up. The amount of building that has been done there within the last two years is almost past belief, and new buildings are still everywhere in progress. In 1873 designs for a new court-house and city hall were submitted in competition, and we were led to illustrate one of them as the most approved design, which in reality was not so. The design actually selected for execution we illustrate in our present number. It was designed by Mr. Thomas Tilley, architect.

Mr. Tilley designates the form presented by his plan as that of a "Compound Greek Cross." The whole square, bounded by Randolph-street on the north, Washington-street on the south, La Salle-street on the west, and Clark-street on the east, will be occupied, the wings being at right angles from each arm of the figure. In the elevation two orders of architecture are treated—from basement to second story, the Roman-Doric, and above the Composite. The columns in each case are two stories in height, with fitting cornices.

Ornamentation in the form of statues in bas-relief is placed upon the corners. The entrances are four in number, situated at each corner. Massive steps lead to each entrance, terminating in a portico sustained by sixteen columns of the composite order. A hall-way leads directly to the great rotunda, which is a feature in the plan. The crown of the dome will be 275 ft. from the ground, and an unbroken view can be had from the rotunda. In the dome will be an illuminated clock, and crowning the dome will be the watch-tower and fire-bell, in a position to be useful in the whole city. Upon each wing will be placed a smaller dome of iron, to relieve the sameness which would otherwise be noticeable. The public hall will be in the third story, and 64 ft. by 150 ft. in size, surmounted with a wide gallery. The shape and size of the building preclude the possibility of a courtyard, and light is given to the various offices, halls, corridors, and rooms by the diagonal form of the building. The vaults are ranged around the rotunda, and are easily accessible. The details of the building are carefully elaborated. The architect recommends the use of limestone, sandstone, iron, and such other materials as are fireproof.

Mr. Tilley furnished the committee with the following estimate of cost:—

	Dollars.
Masons' work	783,741
Cut stone	948,972
Ironwork	673,585
Carpenters' work	168,784
Plumbing and gasfitting	57,394
Heating and elevators	97,956
Plate-glass	71,140
Frescoing and painting	37,800
Tiling	43,794
Marble-work	15,470
Statuary and decorations	33,153
Prismatic lights	3,750
Lightning-rods	4,100
Total	2,909,639



PROPOSED COURT HOUSE AND CITY HALL, CHICAGO.—DESIGNED BY MR. THOMAS TILLEY, ARCHITECT.

PROGRESS OF THE LIVERPOOL DOCK EXTENSIONS.

MUCH progress has already been made in carrying out the great scheme of dock extension in Liverpool, projected by Mr. G. F. Lister, the dock engineer, the principal features of which have already been described in the *Builder*. The new docks already begun are those to be devoted to the accommodation of the steam trade. They are to be made in the space reclaimed from the foreshore of the Mersey, between the north quay of the Canada Basin and the Seaforth shore. The area of this space is about 1,365,000 square yards, the length being about 6,200 ft., and the breadth 2,000 ft. At the front of this tract of land, and parallel with the river, a wall of enormous strength has been built, faced with granite. At the back will be formed a roadway or promenade, which may become one of the attractions of the town, and will certainly be of advantage to the inhabitants of the surrounding neighbourhood, which is thickly populated. A large portion of the area thus inclosed is now being filled up; and, to prevent the encroachment of the sea, a wall has been built from Primrose Bridge down to the river wall, a distance of nearly 2,200 ft. The foundations have been laid at the extreme westerly point of this wall, where it joins the river frontage, for a strong battery, to be constructed by the Government for the defence of the port.

The aim of the engineer has been to retain undisturbed, as far as possible, the existing arrangements and appropriation of the adjoining docks, while providing for largely increased dock and shed accommodation for steamers of unusually large size. The width of the entrance to the Canada Basin from the river is accordingly to be increased from 250 ft. to 400 ft. The area of the basin will be enlarged from seven acres to eleven acres, and form one of the principal entrances of the new docks. There will be other very wide entrances in the new north dock wall. The basin is to be excavated to a great depth, and the sill will be laid much deeper than anything hitherto constructed on the Liverpool side of the Mersey; thus giving a depth of water at the highest state of the lowest tides during the year sufficient for the entrance of the largest steamers into the new docks, and obviating the necessity for their being loaded and unloaded in the river. In connexion with this Canada Basin there will be a half-tide dock, covering an area of twenty acres, and having an aggregate quayage of 3,070 lineal feet. Northward of this will be the system of docks intended for the steam trade. The main portion of the dock, which will extend in a northerly direction, parallel with the river, will be 1,500 ft. long, by 500 ft. wide, having three branches extending eastward, of the total length of 1,400 ft. and a width of 300 ft. The total area of the system will be 43¾ acres, and the total quayage 10,870 lineal feet. In order to expedite the overhauling and repairs of ships a new system of hydraulic docks, invented by Mr. James Clarke, C.E., has been adopted. These docks are to be 500 ft. long, and capable of receiving and raising the largest steamers. At the north-western extremity of this dock two passages will be formed, leading into the mineral dock, which will extend for 1,600 ft. in an easterly direction by a width of 500 ft. towards the north. The area of this dock will be eighteen acres, and its gross quayage 3,850 lineal feet. The engineer has also planned two graving docks on the eastern side of the half-tide basin, each 900 ft. in length. Adjoining these will be another dock for repairing, 820 ft. long, and 140 ft. wide.

The works, although they have only been a short time in hand, are already of a most interesting character, and indicate the great magnitude of the undertaking in hand.

THE WORK TO BE DONE AT ST. PAUL'S.

SIR,—The models and sketches produced by Mr. Burges for the illustration of his scheme to decorate St. Paul's Cathedral in the style of the Italian Renaissance School of the best period, and his proposed *modus operandi*, appear to me to be conclusive proofs that a result in accordance with the conditions under which the work has been undertaken cannot be insured. I believe that neither Mr. Burges nor any one of the many distinguished artists who are reported as having been requested to assist him, can predict whether their united efforts under his guidance will produce that harmony of decoration which it must be admitted is essential, or whether each of their efforts will bear the stamp of individual workmanship, thereby rendering the whole nothing less than a series of disjointed decorative or pictorial works.

Mr. Burges's models must be accepted, of course, as an indication of his general scheme of decoration, and the analogy drawn by one of his supporters between his sketches and the rough draft of an important document is happy. A rough draft, although it may contain condensed and even abrupt expressions of thought, is or ought to be grammatical, and the abbreviations employed are of a sensible character. A variety of ideas may be expressed, and the whole draft contains indications of the principal points which, when enlarged and perfected, are fitted together to make up the final work.

I now propose to give a few notes upon the condensed or abrupt expressions of thought, and upon the indications of principal points which Mr. Burges has submitted to public criticism in his scheme for the decoration of St. Paul's, said to be in accordance with a well-defined style of decorative art. In proposing to employ various kinds of material and methods, such as mosaic, marble veneers, stained glass, modelling in plaster, gilding and paint, Mr. Burges does no more than a writer who indicates in his rough draft that his methods of expressing his ideas will be varied. I pass, therefore, to the quality and coherency of the thoughts. The proposed veneering with marble of the stonework has been forcibly and justly inveighed against. Italian decorators of the sixteenth century only used such veneers for rough brick surfaces, which were from the beginning of their work designed to be covered in such a manner. They did not veneer honest stonework. In his sketch-model Mr. Burges repeats the same design of arabesque or ornament for those panels, spandrels, spaces, &c., which are of the same dimensions. The sixteenth-century Italian decorators delighted in varying their details. Mr. Burges does not even give a hint that he proposes variety. A gold-moulded ornament of a definite character,—not an abbreviation of some more intricate and ingenious work,—holds a prominent position as border to the dado of the east end and adjoining walls. The sides of the large column which support the arches of the choir are each cut up into two panels. The upper panel is the largest. Then comes a bit of the gold-moulded ornament, which forms a feature of the main walls, and below is a panel of geometrical mosaic-work. Thus it will be noted that the gold ornament passing above the dado, and being introduced into the columns, brings the columns and walls into a unity. But the columns are important structural features, distinct from the walls altogether. They should be emphasised as such, and any ornament to be applied to them should assist their meaning as supports. The panelling treatment, if adopted, should be in one piece from the capital to the plinth. A good opportunity would be presented for painting fine flowing arabesques, such as an Italian Renaissance artist would have executed. To cut up the surface of the columns as suggested does not accord with the known principles of the best decorative artists of the sixteenth century. In regard to the spandrels of the arches above the north and south windows a great opportunity for using sixteenth-century suggestions will be lost if the geometrically diapered gold ground be adhered to. The roundels in the centre of the spaces lack the characteristic mouldings which a sixteenth-century decorator would have imparted to them. Above the spandrels come panels of figures illustrative of Biblical subjects, which, if adopted, will require good broad designing to make them decorative, effective, and according to sixteenth-century ideas. The panels suggested are at present remarkable for their harsh brilliancy of colour.

Raffaelle, Michelangelo, Giovanni da Udine, Polidoro da Caravaggio, and their brethren, will turn in their graves if Mr. Burges's bulky garlands of flowers and fruits, his red-gold Cupids, and his escutcheons, hybrid in character, and seemingly derived from a *mélange* of Louis XVI.'s style, and rollicking ornaments of Queen Anne's period, are permitted to be classed as decorations belonging to their period of Italian art!

Opus sectile is well adapted for a mosaic pavement after a Renaissance design. Surely, however, the suggested pavement for the apse of the choir is of an early Romanesque style. The other portions of the proposed pavement appear to belong to the *opus vermiculatum* class; but their indications are not very clear. Decorators of the best period of the Italian Renaissance did not use gilding as though it were whitewash. Yet what is one of the first comments of the casual visitor who inspects Mr. Burges's models? "Gilt gingerbread!" or "What a tremendous amount of gilding!" It seems obvious therefore that the decorations suggested by Mr. Burges represent a mixture of periods, and so fail to comply with the conditions under which it is understood he agreed to work. Mr. Burges has, I believe, given more attention to Mediæval art than to other styles, hence the reason for his showing himself to be a tyro in the use of Renaissance art. He does not appear to be confident in his own judgment as to details, for one of his admiring critics has told us that he (Mr. Burges) found it advisable to confer with certain gentlemen of "that peculiar rank in the artistic hierarchy which made it possible for him profitably to consult them at the 'rough stage,' as he could not have done R.A.s." Here is a very weak point in Mr. Burges's scheme. There seems to be no *atelier* of students at his command to which he could communicate his general ideas. If such existed Mr. Burges would then have the means of being a master-mind to direct the work of the students or *employés* and the whole would at least bear the stamp of *one* style of art, whatever it might be. Michelangelo's decorations of the Sistine Chapel bear the stamp of having emanated from one source, though he was undoubtedly assisted by workmen whom he had trained or whose inclinations he could control. Raffaelle's cartoons give us another instance of a series of great works executed by a number of persons completely under the directing influence of the one originating general. In the absence of an *atelier* of trained students or workmen, what is Mr. Burges to do after his consultation with the gentlemen of the "peculiar rank in the artistic hierarchy"? Not being a strict disciple of the Italian Renaissance masters, not being professionally a *decorative artist*, and not feeling himself to be one, he has recommended the Committee for the decoration of St. Paul's to offer commissions to leading Royal Academicians for the execution of certain details. Mr. Burges's position as an accomplished architect of the Mediæval school is unquestioned, but has he made a supreme position from which he may, like a Von Moltke, with a consummate knowledge and skill, direct the operations of artists holding high artistic positions? The leading Royal Academicians who may undertake to assist in the work, each has his own style. How can Mr. Burges, possessing an imperfect knowledge of the style required, infuse into the varying works of those artists a harmony of style? The task is impossible. The artists themselves are not specially known as followers of the Italian Renaissance school. Is the Lunette exhibited in the Royal Academy a specimen of Royal Academical decorative art?

The decoration of St. Paul's Cathedral as at present contemplated would be a gigantic and direful monument of British nineteenth-century inaptness and ignorance in the practice of a beautiful and well-defined style of Italian art.

A revival of Italian Renaissance art at the South Kensington Museum has been commended by the *cognoscenti* in such matters. It would seem to be a waste of national resources if the experience gained by this revival be not utilised.

Three questions arise—will the Committee of St. Paul's decoration send Mr. Burges and a class of students to Italy to study Italian Rennaissance, and so form themselves into the required *atelier* of competent artists? will the Committee invite new designs from decorative artists who are versed in the practices of the Italian Renaissance school? or will the Committee instruct Mr. Burges to avail himself of the South Kensington experience, and then submit a new scheme for decorating St. Paul's? A.

Olney Church.—The thorough restoration of this church has been decided upon. Several efforts have been made at various times to erect in Olney some fitting memorial of the poet Cowper, but they have all proved unsuccessful. The present project, however, is likely to secure the sympathy and support of a large number of all denominations. The church "where Newton preached and Cowper sang" is well worthy of careful preservation.

THE PROPOSED NEW CITY FRUIT AND VEGETABLE MARKET.

SIR,—Some time since the Markets Improvement Committee advertised for designs for a fruit and vegetable market, and received in reply some twenty-four designs, and, as in the competition for the dead-meat market I had been successful, I thought to try my fortune again.

For the information of those who do not know the site, I would say that the present Farringdon Market stands on the side of a hill, with Shoe-lane on its highest level and Farringdon-street at its lowest, the difference in gradient between the two being 18 ft. 6 in.

The particulars furnished to competitors were very meagre: they told little, and, I may say, gave no information beyond the fact, that a market for fruit and vegetables was required, and the present site was the spot on which it was to be built; from which it might be inferred that the committee had no definite idea of the form the market should take, and so invited the architectural world to ransack its brains, or, in other words, men were invited to give the result of their experience, draw upon their own wit, and embody the whole in architectural drawing.

Now, I was one of those who supposed that he who most economised the site, showed the fullest extent of its utilisation, and made withal an attractive design, would carry off the blue ribbon; but in that I was mistaken, as the following extracts from the public papers will show.

The design placed first contemplates cutting down the side of the hill, roofing over the excavated space, and having one market only, although it would be buried, and necessarily badly ventilated, surrounded as the site is by high buildings. The Shoe-lane side, however, is open, and the conclusion that most people would arrive at is, that, as light, air, and ventilation could be that way obtained, it should so be; but, singular to relate, this is to be built on. The sanitary effect is obvious.

Every market of importance in this country and on the Continent is placed in a public way that traffic may flow through it, and trade follow in its train; but this is to be a departure from the ordinary rule, and is to be "run to earth."

At a meeting of the Common Council (vide *City Press*), Mr. Deputy Fry, a member of the committee, asked Mr. Rudkin, the chairman, "Whether the court was to be committed to the principle involved in the 300*l.* premium design?"

Mr. Deputy Fry maintained that it would be inconsistent to give 300*l.* for a design which involved one distinctive principle, as being the best approved, and to build a market on the very opposite. If they carried out the plan of "Estelle," they would build in a hole, and it would not be appreciated. With two such frontages as they had in Farringdon-street, and in Shoe-lane they ought to be able to make a market that would draw.

Again, on Monday, June 30th (*vide* the *Times*), Mr. Deputy Fry contended that if the market was built on the low-level it would be simply burying it, and thus repeating the existing failure.

Mr. Rudkin, the chairman, replying to an observation by Mr. Deputy Fry, said *the upper market* would be reached from the Shoe-lane side of Farringdon-street; Stonecutter-street, *i.e.*, the present connecting way between Farringdon-street and Shoe-lane, being abolished and built over; but the design placed first has no upper market. Mine, however, which has been placed third, has an upper and lower market,—an arrangement which the configuration of the site naturally suggests, and of which examples are not wanting. See Aberdeen, Brussels, &c.

My object in writing is contention for position; for, although I am beaten, I feel not to have been fairly defeated, and as I charge "Estelle" with not having solved the problem satisfactorily,* I ask him to publish his design, and I will publish mine, in the professional papers: we shall then have the advantage of professional judgment, and each design will be relegated to its right status.

T. E. KNIGHTLEY.

* Which sentiment is largely shared by many members of the court, as evidenced by Mr. Lawley's motion on the Agenda paper for Thursday, the 16th of July, and which runs as follows:—"It be referred to the Markets Committee to consult the architect, or take other professional advice, as to the desirability of erecting a high and low level market [which is the distinctive feature of my design] on the site of the present Farringdon Market, reporting forthwith to the court."

EASTBOURNE CONVALESCENT HOSPITAL CHAPEL.

THE new chapel which has recently been added to the All Saints' Convalescent Hospital, at Eastbourne, chiefly through the generous liberality of two donors whose names the treasurers are not at liberty to disclose, has been consecrated by the Visitor, the Bishop of Chichester.

The architect is Mr. Woodyer, of Graffham. The building is connected with the main edifice by covered passages, and is of the same materials and of corresponding architectural style as the hospital itself. It is in length 111 ft.; in width, 31 ft. 6 in.; and in height, 32 ft. 6 in., and is intended to accommodate 300 patients, inmates, and officials. There are also smaller aisles, to receive a limited number of visitors. Internally the building is divided into eight bays and an apse, by moulded and clustered stone columns, the centre shafts of which carry the principals of the roof, whilst from the side-shafts spring arches, on which the moulded roof-plates rest. The polygonal apse and the two bays next to it are ceiled with wooden groining, which has been painted and gilt in foliage, with the heads of the Apostles in the several groined spaces. The walls internally are built of coloured brickwork, with bands of blue forest stone, stone tiles, &c., the easternmost bay of the apse being filled with stone tabernacle work, both as to the jambs and mullions of the windows. In the western bay is built a screen-gallery of oak, for the private use of the Sisters of Mercy, who superintend the hospital, and whose property it is. This is approached by a stone staircase in the eastern porch, and is carried by Devonshire marble columns. The same material is used for the steps, &c., at the east end of the chapel. A small transeptal building on the north side of the chapel contains the organ. The three eastern windows are filled with stained glass, by Messrs. Hardman, of Birmingham, as a memorial of the founder of the hospital, the late Rev. Upton Richards, and more will follow.

Messrs. Wheeler, builders, Reading, have carried out the works; the heating and water-supply are by Messrs. Addis; the carving by Mr. Nichols, of London; and the metal-work by Messrs. Filmer & Mason, of Guildford.

In addition to the chapel the new works include wards for boys, linen-stores, three rooms for visitors connected with the institution, and the enlargement and completion of refectories for patients.

PLUMBERS ABROAD AND AT HOME.

SIR,—In your issue of the 4th inst. (p. 570) you, despairingly quoting Hotspur, inquire, "But will they come if you do call?" Depend upon it, they will. No one is to blame for the wretchedly negligent English plumbing but the architects themselves, who trouble little about such unnoticed work, being preoccupied with artistic details. Now, it is certainly indisputable that it is better to live in an elegant house than in an unsightly one, but that all the fine-art decorations in the world will hardly compensate for death by neglect of sanitary precautions, you will perhaps allow. Is it not a standing disgrace to us that, until Prince Albert actually died, and the Prince of Wales nearly died, of sewer poisoning, no one ever had a thought of closet ventilation, nor of the proper localities for closets in a house? Are we to spare a prince for every step of progress, or will our plumbers learn for the future without? They burn down cathedrals and music-halls with unflinching impartiality, by means of a system of soldering long ago abandoned by other nations. Thinking a good "wiped joint" the perfection of human ambition, the plumber takes a long time over it, and admires it lovingly from every side before he can make up his mind to part with it. This choice production of human skill is perhaps laid in the earth, or built into a wall, and has no need of this fine-art finish, but gets it, nevertheless. Elsewhere, by means of the French blow-lamp, such a joint could be made in half a minute to a minute, no metal lost, and no tin vaporised in the pot that is everlastingly on the fire. No fire, and therefore safety; no waste, and therefore economy; quickness, and thus economy again; all these are the advantages of this "wonderful lamp," and all these advantages the plumbers of England deny to the British public and to themselves. These joints are both stronger and quicker made than the ordinary wiped ones, and cost not one-sixth the latter.

The quantity of tin that is lost through the "metal" in the melting-pot being on the fire continually, must be experienced to be believed; the lead remains, the tin burns out, and then comes the stereotyped complaint that the "metal is too poor," and the sacrifice of another lump of tin to mend it. Then, again, the cost of coke, devils, ladles, and so on; the dropped metal; and last, but not least, the risk inseparable from the use of an open fire!

Then as to soil-pipes. We use iron ⅜ in. thick, lacquered with Dr. A. Smith's asphalte varnish, spigot and socket ends leaded in. Generally the diameter is 5 in., and a zinc ventilation-pipe, nearly as big as the soil-pipe itself, is carried out through the roof, and fitted with a cowl. The closet-traps are of iron too, and that joy of the bold plumber, the infuriating "D trap" is kept religiously out of the country. The result is, of course, very few and very inexpensive repairs, as no one can either drive a nail in, or poke a cane through either traps or soil-pipes, or destroy their substance with disinfectives,—chloride of lime, for instance.

Neither do we, notwithstanding our severe winters, wake up and find pipes frozen, because the strict inspection usual forces the plumbers to lay pipes in situations where they cannot freeze; and if a dangerously cold locality must be traversed the pipe is insulated by felt, and, if necessary, warmed by a gas-flame and hot-air tube.

Many other rules exist on the Continent that would worry our London plumbers to death, especially the habit of actually doing a day's work of ten hours, and a full day too on Saturday. I tried the experiment of employing Englishmen, and it did not pay. I tried about nine months with seven men, but desisted, one proof showing me its unremunerative character. I gave one, with two labourers, a large job,—a mansion to be fitted with hot and cold water. He was over it three weeks, and had not then finished. I then put into the next house (exactly a similar job) a German and one labourer on piece-work, and they were finished in seven days and a half! The difference in the price actually paid for the work was over one hundred per cent. in favour of the latter.

Now the German at piecework earned less than the Englishman at day-work, and came at five in the morning and worked as long as he could see at night.

WILLIAM G. KING.

Frankfort.

DISPOSAL OF HOUSE SLOPS.

SIR,—As you refer to the question of disposing of house-slops, in your notice, last week, of my Self-acting Flush Tank at the International Exhibition, you may perhaps be interested to know the further history of the attempt to dispose of the house-slops at the cottages of mine in Essex, of which an account appeared in your paper of January 6, 1872.

To follow the order of my former account I will first refer to the earth-closets. My subsequent experience fully confirms what I there stated, viz.—"That nothing short of an almost daily superintendence will secure the care requisite for earth-closets in the present state of ignorance and indifference of agricultural labourers, even of the better class." For a certain time I had frequent opportunities of visiting the cottages, and the earth was then applied with tolerable regularity. Afterwards I went less frequently, and then precisely in the ratio that the frequency of my visits decreased did the application of the earth decrease also. Finally, the practice of the tenants has settled down to merely throwing a certain quantity of earth in bulk into the cesspool when a visit is expected. Even this result, however, unsatisfactory as it is, is a decided improvement on the former state of affairs, as it is surprising how beneficial is the effect of the smallest supply of earth. The water-tightness of the cesspool, moreover, has stopped the offensive percolation into the ground, while its reduced size enables it to be more readily, and therefore more frequently cleared out by the tenants.

Of the method adopted for disposing of the house-slops I am able to give a much more satisfactory account. The subirrigation has now been in action for six years, and answers completely. The sewage is absorbed so quickly by the soil and vegetation that it has never reached the lower ends of the subirrigation drains at all, notwithstanding the rapidity with which it is

discharged from the syphon tanks. The simple method of laying the drains on a continuous bed (shown at the Exhibition) enables them to be taken up and relaid by a common labourer, and therefore reduces the cost of cleaning them to a few shillings annually. Some defects have, however, shown themselves in the syphon tanks. The quantity of water ordinarily used by the cottagers is so small that it is often not sufficient to set the syphon in action, but simply dribbles over just as it comes, so that the tanks practically only discharge on washing-day. The discharge of the tank gives rise to a suction which tends to empty the bell-trap in the sink, and sometimes allows an escape of foul air into the cottages. Lastly, the stone cover on the top of the tank does not close it satisfactorily, and the two covers are very inconvenient to move for cleaning out the deposit. My endeavours to remedy these and other minor defects led to the "Flush Tank," shown in the Exhibition, the application of which for flushing drains was an afterthought.

ROGERS FIELD.

FURTHER USES OF WASTE HEAT FROM LIME BURNING.

SOME time ago we noticed a new method of heating applied to the conservatories and greenhouses at Niddry House, whereby a great saving of coal was effected. The heat of the lime-kiln being more than sufficient for the boilers of the greenhouses, it occurred to Mr. Wauchope, the proprietor of the estate, that the surplus might be turned to account in making gas, and accordingly an ordinary retort, 5½ ft. long by 12 in. in the bore, was built horizontally into the kiln, just above the cast-iron door by which it is fed. As described by our authority, the *Weekly Scotsman*, the mouthpiece of the retort projects about 1 ft. from the front wall, and from its upper side there rises a pipe by which gas evolved within it is conveyed to a hydraulic main over the top of the furnace. Through this main the gas passes to condensers, then to the purifiers, and finally to a gas-holder, about 100 yards from the furnace, from which pipes are laid to supply the house. The experiment has proved successful, and it is found that of the heat generated by the burning of the lime there is even yet a good deal to spare. By one charge of the retort with common gas coal, about 700 cubic feet of gas are distilled, and it may be noted that the kiln which supplies heat to the boilers and retort is one with a draw of half a ton per day. The limestone is used in the proportion of two-thirds to one-third of coal, and it is expected that by selling the burnt lime the expenses connected with the making of gas as well as the heating of conservatories will be nearly covered. Were the system carried out to any extent, provided always that limestone could be obtained at small cost, there would actually be, it is asserted, a profit on the operations.

CASES UNDER THE METROPOLITAN BUILDINGS ACT.

WOODEN BUILDINGS.

TWO summonses at the suit of the district surveyor of South Islington against George Frederick Egg, a builder, of St. Paul's-road, Highbury, were disposed of by Mr. J. L. Hannay, at the Clerkenwell police-court, on the 17th inst. The first charged the defendant with having incurred a penalty by erecting a building in the front part of the garden of No. 17, Highbury New Park without giving notice to the district surveyor as required by the Act; and the second was to force him to amend an irregularity, the said building being constructed of wood. The defendant was represented by a solicitor. It was shown that the building was 20 ft. long, 5 ft. wide at one end, and 7 ft. 5 in. at the other; and that it was originally 8 ft. 8 in. high at highest part. After notice of the irregularity had been given, defendant reduced the height to 6 ft. 6 in. at highest part, but would do nothing more. The question,—"What is a *buiding?*" having never previously come before the magistrate, defendant's solicitor offered various definitions from the dictionaries. The district surveyor placed before the magistrate reports of the most recent two decisions—at Hammersmith and at Wandsworth.*

Mr. Hannay, after listening patiently to all that could be advanced on the other side, said that if he had had only his own opinion to rely on, he might have postponed settlement of the question until he could have consulted some of his brother magistrates; but in the face of the decisions laid before him, he felt that to be quite unnecessary, and must pronounce against the defendant. He must fine him 10*s.* for not giving notice, and call upon him to amend the irregularity forthwith, with costs to the district surveyor on the two cases to the amount of 1*l.* 5*s.*

It is within our knowledge that the defendant in this case used the names of some influential members of the Islington vestry by way of a threat to the district surveyor in the event of the surveyor doing his duty. If we mistake not, this is very close to a criminal offence, and we should not scruple to print his assertions, if necessary, to check such behaviour.

* See pp. 575 and 614, *ante*.

MACHINERY AND WORKMEN.

ON the occasion of a festival given by the firm of Jackson & Graham, on Saturday, at the Alexandra Palace to their *employés*, Mr. Peter Graham, who presided, made some useful remarks upon the effect of the introduction of machinery into their business as upholsterers, and upon the question of trade unions and the relations between employers and the employed generally. Mr. Graham said, the recent large introduction of machinery into their new manufactories had been watched by the carpenters and joiners with some jealousy, but he was fully assured that so far from skilled workmen suffering from this introduction, they would really find their labours materially lessened, whilst their wages would be fully maintained. He did not think the workmen in any branch of his trade were overpaid; but they must remember there was a possibility of the line being drawn too tight, as had happened in the coal districts, where, during a temporary pressure in the demand for that mineral, the coal-hewers had struck for wages so extravagant as actually to impose a tax upon every person who lighted a fire in the three kingdoms. This had been followed by a reaction under which wages had been reduced to the lowest level, and the amicable relations between masters and workmen, which it was a national object to preserve, had been destroyed. He enjoined them to lay this example to heart, and not to be imposed upon by the specious arguments of agitators, whose sole business appeared to be to mislead those upon whose industry they fattened.*

* We have received particulars of a number of outings enjoyed by the men of different firms,—for example, those of Messrs. Morant, Boyd, & Blanford; Messrs. W. Cubitt & Co.; Messrs. Foord & Son (Rochester); and others. It is out of our power to find space for all, and it would be invidious to select.

THE DISASTROUS EFFECTS OF THE LATE STORM IN EAST LONDON.

FROM the proceedings which took place at the meeting of the Whitechapel District Board of Works this week, it appears that the destruction to property in Whitechapel-road and Mile-end during the great storm on Saturday week, was of the most serious character. It was stated that the sewage water was forced up through the gullies in the neighbourhood of Whitechapel-road, to such an extent that the basements of the houses were flooded to the depth of 3 ft. or 4 ft., and that, as a sanitary matter, apart from other considerations, the results were likely to be very serious, for the tradesmen of Whitechapel were occupied until past midnight on Saturday, and even until Monday, in clearing their dwellings of the fœtid filth thrown up from the sewers, so that it would be no matter of surprise if epidemic disease followed. In answer to a question as to what remedy the tradesmen had, some of the members of the Board thought they had no remedy, as no one was to blame for it, and "they could not control the ways of Providence." Mr. Gladding, however, said that they had their remedy from the Comptrollers of the Sewers, as the nuisance arose not from the rain from above, but from the sewage below, and this latter was under the charge of the Metropolitan Board. The inhabitants wished to know if they could seek a remedy from the Metropolitan Board for the serious losses they had sustained, and whether they must look to a recurrence of the flood should another storm arise. In reply to this, it was urged by Major Munro, and other members of the Vestry, that the fury of the storm was altogether exceptional, and that it was unfair to find fault with the Metropolitan Board for such an event. There were at least 2 ft. of water along the Whitechapel and Mile End roads, and the destruction of property had been enormous; but then it was an act of Providence, and the best conceivable system of sewerage would not have carried away the vast volume of water which descended in so short a time. After a very long discussion, in the course of which a great deal of evidence was given as to the extraordinary amount of damage caused by the flood, it was agreed to prepare a statement to be submitted to the Metropolitan Board.

PUBLIC LOANS FOR BUILDING AND IMPROVEMENT PURPOSES.

AN official document, just issued from the Treasury, shows at great length the loans advanced to counties and boroughs in England and Wales, chiefly for building purposes and public improvements. The total amount of the original loans borrowed by the counties in England was 4,818,815*l.*, and of this, up to the 1st August, 1873, 2,722,969*l.* remained unpaid.

In Wales the total amount of the original loans was 382,153*l.*, and of this no less than 241,746*l.* remained unpaid. The total amount borrowed by English boroughs was the enormous sum of 36,705,944*l.*, and of this 30,440,591*l.* remained unpaid.

When it is considered that the greater part of this 41,906,912*l.* has been expended amongst persons engaged in building pursuits, some idea may be formed as to the indebtedness of building operatives to a public loan.

The rate of interest ranges from 4 to 4½ and 5 per cent. per annum, and the sums advanced average from 1,000*l.* up to a quarter of a million sterling, and for short and long terms of repayment. The purposes of the loans are chiefly for county gaols, police-stations, lunatic asylums, militia stores, markets, sewerage, parks, flagging, improvements, hospitals, bridges, baths and laundries, cemeteries, and waterworks. The only security for these loans are the rates to be levied on the inhabitants of the places where the money is borrowed for.

GETTING OVER THE STYLE.

"Alas! poor Doric and Ionic, I knew them well."
Shakspeare (improved).

BRING hither hammers, chisels, and pick, and let's improve perfection, quick; remove those pillars, demolish that wall, out with organ-screen and stall; Classic, Romanesque, and Renaissance are pitiable works, on which we advance, Mediæval shall take their place at the point of the Vandal's lance; rescind this, and remove those bones, substitute veneer for stocks and stones; foxes are said to know their den, if you wait till we've done you won't know—WREN.

PROFESSIONAL PRACTICE AND RESPONSIBILITY.

A CONFERENCE of British architects summoned annually from all parts of the kingdom to discuss and suggest the best methods of carrying out professional education and practice, and of noting the progress and changes of architectural art, should undoubtedly be of practical benefit to the profession and the public. The interchange of opinion is as necessary for the growth and development of architecture and its practice, as that of civil engineering, law, or medicine. "*L'union c'est la force.*" No profession can expect to get on satisfactorily without union and co-operation, and if architects would be a trifle less apathetic, and a good deal more free from jealousy and selfishness, much might be done that is at present left undone.

The subjects that received attention at the recent Conference, viz., "Professional Education," "Professional Practice," and "Architectural Art" were well selected, as embracing the theory and progress of architecture, as well as its practice.

It was hardly to be expected that any immediate practical result should follow upon the discussion of "Professional Education" and "Architectural Art," but with "Professional Practice" it was otherwise, as its importance entirely depended upon some resolution being passed settling the points debated, or relegating them to the further examination of a Committee,

appointed either by the meeting itself, or by those who summoned it, viz., the Council of the Royal Institute of British Architects. The opportunity was not taken advantage of by the meeting, however, and the Royal Institute is not likely to move in it unless it is pressed upon its attention by a numerously-signed memorial, calling upon them to appoint a committee to investigate and examine into questions appertaining to Professional Practice and Responsibility, with a view to more completely defining the same, and to suggesting some simple and economical way of obtaining a just and equitable decision in cases of dispute arising between architects and their employers. B.

*** No such memorial is needed, as the Council of the R.I.B.A. annually appoint a committee with the title and purpose indicated. The writer further suggests that the Council of the Royal Institute of British Architects should issue in a printed form to its members a proposal for a simple and inexpensive arbitration to be enclosed to their clients on engagement, in the event of any difficulty, doubt, or difference of opinion arising as regards their mutual responsibilities. We are not prepared to endorse the suggestion. Differences between respectable architects and their clients are too rare to make it expedient to begin business with any new one by a suggestion that disagreement is more than probable.

A TRAP FOR THE SURVEYOR.

MR. LIVINGSTONE, the newly-appointed Surveyor to the parish of St. George, Hanover-square, at the last meeting of the St. George's Committee of Works, suggested that he should be either supplied with a horse, or with the keep of one. His rounds were so extensive that he found it impossible to look after the men as he should like to do while he had to walk. The men, he was sure, did not do three days' work a week; in fact, it was pretty much the same all over the London parishes. He had 200 men to see after, and there were only two foremen under him. Many of the men, from age and infirmity, were of little use on the roads. It would be very easy to obtain a superior class of workmen, but they would leave on the first favourable opportunity. The oldest men should be weeded out from time to time. In some of the country places the men worked in all weathers, the authorities finding them waterpoof clothing.

He should prefer the Vestry providing him with a horse without a cart, but if it should so happen that he had occasion to go out of the parish, some ratepayers might say,—"There is the surveyor using the parish horse for his own pleasure," and he was anxious to avoid that if possible.

General Codrington, Colonel Scott, and several vestrymen considered a horse and trap would be worth half a dozen foremen; and it was resolved that the Vestry be recommended to buy a horse and cart for their surveyor, and to obviate any unpleasant remarks from ratepayers as to Mr. Livingstone using the turnout for his own pleasure, it was hinted that the cart might be painted with the parish name at the back, the same as the watercarts. The men are also to be supplied with waterproof overcoats.

A CAUTION TO CONTRACTORS AND THEIR SURETIES.

MR. BARON POLLOCK, and a special jury, at the Nisi Prius Court, Durham Assizes, last week, tried a case of breach of contract, of some importance to road contractors.

In the case before the Court, the Consett Local Board were the plaintiffs, and Mr. John Walker, contractor, and George Walker and William Leyburn, as his sureties, were the defendants.

Mr. Bruce, in stating the case, said the action was brought on a bond which the defendants entered into to form a road under certain specifications; one was, that the road was to be made to the satisfaction of the surveyor to the Local Board.

The contract was signed on the 15th of July, and the contractor agreed to complete the road by the 1st of January, 1873, for £820.

The Consett Local Board very properly desired that one of the defendants, John Walker, the contractor, should enter into a bond, with two sureties, that he would carry out his agreement; and he entered into a joint bond with the other two defendants, to the amount of 200*l.* for the due fulfilment of the contract.

On the 1st of January a very small portion of work had been done, and on the 3rd of that month, in consequence of the report from the surveyor, the Local Board, through their clerk, gave the contractor notice that he was not proceeding with the road to the satisfaction of the surveyor, and that, according to the specification, the Board would call in a third party, at the three defendants' cost, to complete the contract.

This notification reaching the knowledge of the two bondsmen, they became alarmed; and at the next meeting of the Local Board the contractor and his two sureties attended, and, admitting that there had been very great neglect, promised to amend, and begged the Consett Board to give a further trial. The Board, not wishing to act harshly, consented to allow the contractor to make another start; but the work went on no better than before, and when further remonstrance was made by the surveyor, the contractor refused to proceed with the works, except at his own time and convenience.

So far as the unfortunate bondsmen were concerned there was no defence; but Mr. Heath, counsel for Mr. Walker, the contractor, contended that if the surveyor and his Board had had patience, the road would have been made in time.

This brought up Mr. Elliott, clerk to the local Board, who proved that the total amount paid to the contractor for work done from time to time was 288*l.* 6s. 10d., and the sum paid to the contractors Wilkinson & Stobbart, who were called in to finish the road under the first specification, was 85*l.* 6s. 5d.,—the price of labour and materials having increased.

John Walker, the contractor, said this contract of Messrs. Wilkinson & Stobbart's was quite extravagant. In January, February, and March he was going on with the work at the rate of 50*l.* a month; and, if the surveyor had let him, the road would have been completed in two months for 300*l.*

The Judge said practically there was no answer to this breach of contract; and the jury found for the whole sum claimed in forfeiture of bond, 200*l.*

This will carry heavy costs, and the plaintiffs will, in ten days, be entitled to levy upon either one or all three of the defendants for the amount recovered, with costs.

THE "BEDIZENMENT" OF ST. PAUL'S CATHEDRAL.

SIR,—You have been good enough to credit me with having invented the title "bedizenment,"* with reference to the suggested adornment of St. Paul's Cathedral; and one of your most esteemed correspondents considers the term "unhappy." Yet, in a recent letter to the *Times*, this gentleman deprecated that "the noblest Protestant Cathedral erected within the last two centuries . . . . should be bedizened with the sensuous allurements of the harlot"; while, according to the *Saturday Review*, a late famous minister pronounced St. Stephen's Chapel to be "bedizened." I am willing enough to father the substantive, but the honour of having hatched the participle and the idea is divided between Professor Donaldson and Mr. Ayrton. Your other correspondent, H. W. B., has flung Byron at me for daring to call the interior of St. Peter's vulgar. I ought to have qualified the expression. When he visited St. Peter's he doubtless came from the West; but when I visited it I came from the East—from Delhi, Agra, Ahmedabad, Cairo, Constantinople, and Athens,—and its internal decorations seemed to me to be *comparatively* heavy, vulgar, and meaningless. That Byron should have written some beautiful poetry about it may satisfy "H. W. B."; but it fails to prove that the decorations of St. Peter's are beautiful. If I did not fear to soil your pages, sir, with quotations from "Don Juan" or the "Vision of Judgment," it would be easy to show that Byron also wrote verses about beautiful things which are as coarse and illiterate as the graphic descriptions in "Childe Harold" are sublime.

WILLIAM H. WHITE.

* Our correspondent misapprehends our observation.

QUESTION IN THE GLASS TRADE.

IN the case of Samuel M'Gee *v.* Edward Bolton, which has recently been tried in the Warrington County Court, the plaintiff is in the employ of the defendant, who is the proprietor of the Orford-lane Glass Works.

Mr. Moore, for plaintiff, stated that some time in March there had been a strike, and on the 10th or 11th of that month the plaintiff was sent for to resume work, but when he arrived at the works there was nothing for him to do. He, however, resumed work, and at the end of the week he received 24s. According to the custom of the trade, masters were bound to find their *employés* eleven moves per week, representing thirty-three hours' work, for which they received 24s. The following week he worked more than the required number of moves, and plaintiff deducted from his wages the 6s. which he alleged he had been overpaid the previous week. It was in order to recover this amount that the action was brought, and Mr. Moore stated there were several other cases of a similar kind depending on the result.

After evidence *pro et con.* was led as to the point at issue, the Judge said he thought it had been clearly shown by the plaintiff's witnesses that it was the general custom in the trade to pay the workmen as represented; and unless there was an express agreement made when the plaintiff was first employed that a different rule prevailed at these works, he was entitled to recover. Judgment was thereupon given for the amount claimed.

Mr. Moore at first applied for costs, but said he would not press it, as the men were still in Mr. Bolton's employ.

WHAT ABOUT KIRKSTALL ABBEY?

SIR,—About a year ago a statement appeared in the papers that a scheme was being promoted for restoring Kirkstall Abbey, and using it as a training college for the clergy of the Established Church, and for the performance of the Church services.

Nothing further having appeared relating to this attempt to restore that beautiful relic out of existence, I trust it may now be considered safe from the hands of such like violators. Nevertheless, I and many other lovers of the monuments of England's past history would be glad to be assured by some of your better-informed correspondents that it is so.

CONSERVATOR.

FROM SCOTLAND.

Edinburgh.—Colonel Sprot and the officers of the 91st Highlanders have presented the public with a drinking-fountain. The site selected is the Castle Esplanade, where the erection of the fountain has just been commenced by Messrs. Stewart, M'Glashan & Son, sculptors, by whom it has been designed. Placed against one of the piers at the south-west corner of the esplanade, it consists of a simple basement projecting from the wall, and containing a trough for horses, &c., and over this three tablets, rising to a height of 7 ft., and connected together by a well-defined bead running round the outer edge. The material selected for the work is the durable free-stone of Binny Quarry.

Killin.—The Local Authority of Killin have, after some delay, accepted the offer of Mr. Lamont, contractor, Glasgow, for the construction of the proposed water undertaking, which is to supply the villagers with an abundance of pure water. The works will be proceeded with immediately.

CHURCH-BUILDING NEWS.

Totnes.—The work of restoration of St. Mary's Church has extended over some five years, although a great deal yet remains to be done. The restorations are under the superintendence of Sir G. Gilbert Scott. The works done include a new north aisle and vestry, the removal of the old pulpit from the north to the southern side, and the restoration of the same. The removal of the galleries has brought out the tower-arch—before altogether blocked up. The organ has been removed to the east end of the north aisle. The white-wash has been scoured off the walls and arches in the nave and aisles, and the arcade columns have been straightened and mended. Several new windows have been put in, and the aisles and avenues laid with encaustic black and red tiles. The seating is in red deal and stained and varnished, more or less ornamented by carved ends poppy-heads, enriched fronts, Perpendicular foliage of the local Devonshire type. The carved work has been executed by Mr. Harry Hems, Exeter. The whole of the work has been carried out by Messrs. Reeves & Son, of Totnes, builders. The east window is blocked by a high baldacchino, of Corinthian design, more than 30 ft. high, and, like its surroundings, white-washed many coats deep; whilst high pews block the rest of that part of the building.

Road.—The ancient parish church has been re-opened after restoration by the Bishop of Bath and Wells. The work was commenced in 1872. The chancel and aisle, and added vestry and organ-chamber have been done at the cost of the late rector, Rev. C. Glossop. The east window is a memorial of his wife, by Messrs. Lavers, Barraud, & Westlake, of London. The subject is the ascension of our Lord. The body of the church has been paved with tiles, and re-seated throughout, pitch pine replacing the high straight-backed sleeping-boxes of Queen Anne's time. Haden's heating apparatus is used for warming the building, and provision is also made for its effective ventilation. The doors, we should say, are made of oak, from designs by Mr. Davis, but in hanging them the old hinges have been retained. Works rendered necessary to preserve the exterior of the church have been carried out. The restoration has been carried out under the direction of Mr. Charles E. Davis, by Mr. Richard Mann, of Bath. The total cost of the work has been about 3,000*l.*, of which the late rector gave about 1,200*l.* (the cost of the chancel and aisle), the present rector the new roof, and the remainder is raised by subscriptions.

Highfield (Sheffield).—The foundation stone of the new St. Barnabas' Church, now being erected at Highfield, has been laid. The site is just beyond the police-station. The new church will cost 4,800*l.*, exclusive of the tower, and this amount has already been obtained. An "unknown donor" has also promised 1,000*l.* towards the erection of the spire. The building will be in the early English style of architecture. Its length will be 106 ft., its breadth 68 ft., its height 40 ft., and it is estimated to seat 800 persons on the ground-floor. The architects are Messrs. Flockton & Abbott.

Hornsey (London).—The new church of St. John the Evangelist, at Brownswood-park, South Hornsey, has been consecrated by the Bishop of London. The church, which is still unfinished, has been about seven years in building, owing to a want of funds. The architect is Mr. F. Wallen, of Furnival's Inn. The style of architecture is early Gothic. The building is composed of a nave, aisles, transepts, chancel, and east and west apses, the baptistery being situate in the western apse. At present only the two bays of the nave are complete, with the transepts, chancel, and eastern apse. At the western end of the church there is a temporary wall, which, when funds will admit, will be extended. The tower ridges are carried up to the ceiling. The roof is of timber, ceiled throughout with bordering in its natural colour. The chancel, transepts, and nave are of equal height. The reredos, the lectern, and several stained windows are the gifts of members of the congregation. The building is 200 ft. long, by 50 ft

wide, with a height of 60 ft. to the ridge of the roof, and will seat about 1,000 persons. The cost of the building is about 7,000*l.*, and funds are needed to complete the work.

Digswell, near Welwyn.—The parish church has been re-opened after a restoration. The total cost of the restoration (including the stained glass and the carved oak pulpit) was about 1,200*l.* The architect was Mr. Henry Curzon, of Lincoln's-Inn-Fields; and the builder, Mr. Robinson Cornish, of North Walsham, Norfolk. Messrs. Clayton & Bell executed the stained glass of the west and east windows and window on the south side of the chancel.

Brixton.—A new church, which is to accommodate 1,000 persons, will be erected in Lambeth-road, Brixton, from the designs of Mr. E. C. Robins, of Southampton-street, Strand.

Reading.—The church of All Saints, Reading, which was consecrated in 1865 by the late Bishop Wilberforce, has just been completed, with the exception of a tower and spire near the north porch, and it has been re-opened. The church in its unfinished state accommodated 500 persons. Accommodation is now provided for 200 more. The design of Mr. St. Aubyn, the architect, has been carried out, the church being extended to the westward, and finished with a Galilee porch, or narthex, which is the north, south, and west porches combined,—an arrangement which was found to prevent draughts, while the temporary Galilee porch was standing. Above this porch is a wheel-window, which forms part of a memorial of the late Bishop. In the centre of the window is the dove, and surrounding it are cherubim, then a circle of angels with censers, and then cherubim having six wings each. The design has been carried out by Messrs. Clayton & Bell. The dimensions of the church are now:—Nave, 54 ft. high, 22 ft. wide, and 78 ft. long; aisles, 14 ft. wide, and 14 ft. high to the wall-plate; chancel, 44 ft. high, 22 ft. wide, and 36 ft. long; transept, 17 ft. high, 18 ft. wide, and 19 ft. long; and the total accommodation is 700. The Wilberforce memorial is estimated to cost:—125*l.* for the window, 100*l.* for the font, and 135*l.* for the decorations, which are to include figures in the arcade, and a subject over the font. A considerable sum is still required for these objects, as well as about 360*l.* on the building account. The works have been executed by Messrs. Wheeler, Brothers. The ornamental brasswork has been carried out by Mr. Leaver, of Maidenhead.

Longford.—St. Thomas's Church, Longford, has been consecrated by the Bishop of Worcester. The site of the church is in a prominent position on the main road between Coventry and Nuneaton, and about three miles from Coventry. The building is in the Gothic style, of the early type. It comprises nave, with aisle, chancel, organ-chamber, and vestry, on the north side, facing Hurst-lane. There is a tower, with spire, at the north-west angle of the building, the lower portion of which forms the porch. The church is built of red brick, the internal facings being of buff-coloured pressed bricks, obtained from Nuneaton; the stone dressings to the doorways, nave arcade, and in the window tracery, &c., being executed partly in Attleborough and partly in Box-ground Bath stone. The roof is open-timbered, and covered with brindle-coloured plain tiles. There is accommodation in the building for upwards of 300 persons. It is a chapel of ease to the old parish church of St. Laurence, and is in the parish of Foleshill. It was designed by Mr. J. Cotton, architect, Birmingham, under whose superintendence it was built by Mr. W. Nelson, contractor, Dudley. The total cost of the building, including the purchase of the site, architect's commission, gas, bell, &c., amounts to about 2,860*l.*

Madingley.—The small church, situate in the park at Madingley, has been re-opened, after undergoing a reparation. New roofs have been placed on the nave, aisle, and chancel; a portion of the aisle wall has been re-built; the stonework inside has been cleaned, the plastering renewed, and new floors put over the whole area. The old pew system has been abolished. The cost of the restoration will be between 800*l.* and 900*l.* for the church, the work done to the chancel involving an expenditure of about 500*l.* The architect of the church portion was Mr. J. Morley, Cambridge; the builder, Mr. Warboys, of Comberton; and the stonemason, Mr. Tomson, of Cambridge. For the chancel portion, the architect was Mr. E. Christian, of London; the builder, Mr. Brown, of Lynn.

Benington.—The Church of All Saints, Benington, has been re-opened for Divine service. The whole of the interior has been cleared of its old pews, west gallery, &c., and re-seated with open benches in deal, and newly floored with tile, &c., throughout. The walls have been cleansed of their plaster and pointed, and all the masonry restored; one bay of the nave roof has been entirely renewed, and it is hoped the remainder, with those of the aisles, may speedily follow. The Decorated porch has been partly re-built and re-roofed with oak, the whole of the windows have been restored and re-glazed, and a new heating apparatus has been fixed by Mr. Barton, of Boston. The alteration in the chancel is, however, the most marked. Here a low and flat roof has given place to an open timbered one of the original pitch, the windows restored, the walls cleaned and pointed, new stalls and fitting generally, and a floor of encaustic tiles has been put down. The works are yet in a very incomplete state. The contractors are Messrs. White & Wood of Alford. The architect employed is Mr. Jas. Fowler, of Louth. The entire cost of the work has been about 1,850*l.* Of this sum 530*l.* have been expended on the chancel, 1,250*l.* on the nave, and 70*l.* on the organ.

DISSENTING CHURCH-BUILDING NEWS.

Chapeltown, Leeds.—The foundation-stone of a Wesleyan chapel has been laid in Chapeltown. The rapid and increasing growth of that suburb, which vies with Headingley in villas and other middle-class residences, has caused a demand for sittings in the existing Wesleyan chapel which its capacity could not meet, and rendered it necessary that more accommodation should be provided. A plot of ground in the centre of the village having been obtained, and designs furnished by Mr. C. O. Ellison, of Liverpool, the chapel is now in course of erection. The building will be in the Gothic style, but freely treated. Seats will be provided for about 1,000 persons, and advantage is taken of the fall in the land to get a large lecture-room under the chapel, together with a minister's vestry, lavatory, heating apparatus, &c., all of which can be readily entered from the level of the street at the back, and will be well lighted. Three entrances will be provided from the Chapeltown-road and one from the street behind. The body of the chapel will be divided into four aisles, with a series of small pews down the sides, and larger ones in the centre. A portion of the small ones are to be set aside for the free use of the poor, but without any difference either in their comfort or style. Galleries, as light as possible in appearance, will be fixed on three sides, the seats to be of the same class as those below. Seats will be specially provided for children, and the stairs made so easy and spacious as to be in all respects suitable for them and old people. Internally the chapel will be divided into five bays, ornamental iron columns supporting both the galleries and the roof. The chancel effect will be secured as much as possible, although the space which should be set apart for the purpose will be occupied by the orchestra. There will be a moulded chancel arch, with polished marble shafts, carved caps, corbels, &c., the jambs being carried down to the chapel floor. Behind this will be a semi-circular apse of large size, with traceried window filled in with stained glass. The orchestra will be kept to the lowest possible level,—about 4 ft. or 5 ft. above the chapel floor,—and the front will be of pitch-pine work to match the gallery-front, and have ornamental perforated panels, crimson cloth behind, and moulded cornices. An organ, designed for the chapel, will be erected so that the stained-glass window behind will be seen over its decorated pipes. The fittings throughout are to be of pitch-pine, varnished. At the end opposite the pulpit will be a five-light window with tracery,—the whole filled in with cathedral glass. The exterior is to be built of best local stone, with "Parpoint," or rough-faced walling, and dressings tooled or polished. The front consists of a large central gable, nearly occupied by the five-light window just alluded to. To the left will be one of the gallery staircases. On the other side will be a tower and spire, rising 150 ft., a staircase to gallery forming a semicircular feature at its base, with roof, &c. A door corresponding with that on the left side will front the tower. Over this will be a traceried window, and in the upper part of the tower four recessed cusped openings, filled in with cut-slate louvres, and finished above with circular tracery under the gablets at the foot of the spire. The tower buttresses are worked into octagons above the chapel, and terminate in turrets at the angles of the tower, each having eight circular shafts of red stone, with carved caps, traceried heads, &c. The spire will be octagonal. The contractors are as follows:—Charles Myers, Wm. Shires & Son, J. E. Bodford, J. F. Pollard, and J. Senior, all of the neighbourhood. When the new chapel has been erected it is intended to convert the old one into schools and vestries. The cost of the site and building will be about 9,000*l.*, and already a large number of subscriptions, including 1,000*l.* from Mr. Jackson and 100*l.* from his wife, have been received.

Nottingham.—The foundation-stone of a new Baptist Chapel, to be known as Exeter-hall, has been laid by the Mayor on the unoccupied ground between Shakspeare-street and the Peacock Inn. It is to be Italian in character and treatment, the fronts facing Mansfield-road and Peachey-street. The foundations of the hall (now complete) comprise huge stores of cellarage in connexion with a suite of shops, school premises, tea-room, vestries, &c., on the ground-floor above, which encircle the lower flat or arena of the hall proper and complete the offices of the ground plan. The remaining space of the edifice will be devoted entirely to the hall, consisting of three stories of gallery, describing the form of the horse-shoe, and rising amphitheatrically, tier above tier, the first gallery having seven rows of seats, the second five, and the third three, while the outer tier of the stalls on each story is bounded with ample continuous passage space, offering free ingress and egress round the building, from and to the three staircase-towers, occupying the principal angles. The style of the elevation is Lombardo-Venetian, in brick and stone; the two principal entrances form Corinthian portals, embracing a suite of shops. It is said the whole complete is to cost about 4,000*l.*

Books Received.

Décorations Intérieures Peintes, Salons, Salles à Manger, &c. Par M. CÉSAR DALY, Architecte du Gouvernement. Parts 1 and 2. Paris: Ducher & Co., 51, Rue des Écoles. 1874.

UNLESS we are mistaken, the mere mention in a dozen lines of this publication will obtain for M. Daly a number of subscribers in England. The work is a continuation of his previous series of the Private Architecture of the Nineteenth Century, and represents the coloured decorations executed in private houses by the best firms in Paris, either under the directions of architects or not as the case may be. Each of the parts now before us contains twelve large plates showing the walls, ceilings, doors, and so on, of the various apartments which are to be found in a superior residence in Paris, and would suffice to set up as a decorator any clever ordinary painter who might become possessed of them. The illustrations are executed in an admirable manner, as all works under the direction of M. Daly are, and we warmly recommend "Décorations Intérieures Peintes" to such of our readers as are interested in that direction.

Technical Training: Being a Suggestive Sketch of a National System of Industrial Instruction founded on a General Diffusion of Practical Science among the People. By THOMAS TWINING, one of the Vice-Presidents of the Society of Arts. London: Macmillan & Co. 1874.

FOR at least a quarter of a century, we should think, Mr. Twining has been earnestly at work on this and kindred subjects; and, indeed, in 1851 he published "Notes on the Organisation of an Industrial College for Artizans"; and even now the organisation of such an industrial College constitutes a chief feature of the work under notice. Mr. Twining therefore is a veteran pioneer on the subject of technical instruction, and what he says in the elaborate and matured work which he now issues well merits the best consideration of all leaders in this movement. He has avoided discussing what is no longer disputed; but, on the other hand, he has spared no pains in sifting, classifying, and elaborating into a homogeneous system the various means by which Industrial Improvement, founded on Science, may best be carried into actual effect.

His plan is to show, in the first chapter, the necessity for a Central Technical University; to

sketch, in the second, the leading features of its organisation and functions; to state, in the third, certain facts serving as groundwork to a system of instruction detailed in the fourth; to analyse, in the fifth, the educational requirements of our various industries; and to endeavour, in the sixth, to arrive at legitimate conclusions as to the measures to be adopted.

The immense amount of thought and labour expended upon this work cannot better or more readily be seen than by a glance over "Section 3. Trades connected with the Construction, Decoration, and Furnishing of Dwellings," which the author ranks first in the order of industrial occupations; and in respect to which section he alludes to the feeling of confusion with which he began the consideration of so vast and comprehensive a subject, out of which, however, he has evolved no little order, the whole forming what may be called a treatise on educational requirements or technical instruction in building operations.

VARIORUM.

THE July number of the *Quarterly* begins with an interesting paper, chatty and full of knowledge, on the Isle of Wight,—the leader of the "laughing train" of "little isles on every side,"—

"Wight, who checks the westering tide."

We quote a short passage which catalogues the churches:—

"The churches of the Isle of Wight, though often eminently picturesque, both in position and outline, are not remarkable for architectural beauty. In fact, it was too remote to be reached by more than the fringe of the wave of architectural progress; while a constant dread of the hostile descents of the French and their frequent ravages kept the inhabitants in too depressed a condition to have either the means or the heart for the erection of costly buildings. They are usually long low buildings, without clearstory, and very often without chancel-arch, frequently consisting of two equal aisles or bodies, with no constructional mark to distinguish them, or to define the site of the parochial altar. The best example of this arrangement is the church of Godshill, one of the largest and finest in the island. The towers are mostly low and square; but that of Carisbrooke is a good work of the Perpendicular period, recalling in its outline the plainer Somersetshire examples. The same model has been followed at Godshill, Chale, and Gatcombe; but, picturesque as they are, even these cannot be called good works of art. Fragments of Norman work linger here and there. The best example is the tiny church of Yaverland,—the loved of landscape-painters, as it groups with the gables of the Jacobean manor-house beneath its shadowing elms,—where the south door and chancel-arch are good specimens of the barbaric richness of the style. Wootton, Northwood, and Shalfleet also have Norman doors, and the last-named church the huge stump of an ill-used Norman tower. The best architectural works in the island, at Calbourne, Shalfleet, and Arreton, belong to the Early English period. The later styles present nothing which needs comment, though there is hardly one of the island churches which is not worth turning aside to see. Most of them are charmingly placed, very frequently, as at Godshill, Newchurch, and Motteston, crowning an almost precipitous eminence, and are picturesque with the picturesqueness of a building which has grown into its present form by gradual additions, fused by time into one harmonious whole. The church of St. Lawrence, in the Undercliff, has a wide celebrity, from its diminutive size. Its claim, however, to be the smallest church in England was, even before the enlargement, contested by some of the churches of the Lake District, and cannot now, small as it is, be sustained." *

——Some good earnest writing makes the July number of the *Penn Monthly* very acceptable.

Miscellanea.

Aquarium and Winter Garden for London. The Royal Aquarium and Summer and Winter Garden Society is announced, with a capital of 200,000*l.* in 40,000 shares of 5*l.* each, the object being to provide in the heart of London an aquarium and summer and winter garden, and in connexion therewith to afford facilities generally for the promotion and encouragement of artistic, scientific, and musical tastes. A freehold site, it is stated, has been procured, facing the Houses of Parliament and Westminster Abbey. It is proposed that the centre or main transept of the building shall be constructed principally of glass, forming a conservatory and promenade surrounded by galleries, in which concerts will be held every afternoon and evening, and special concerts every Saturday. In connexion with the main building it is intended to have rooms for private concerts, the delivery of lectures, &c,, while the hall will be so arranged as to be adapted for the purposes of meetings: *conversazioni*, and reading and writing rooms, as well as a library, will be opened for the use of visitors. We alluded to this scheme some time ago.

* Before its enlargement, the dimensions of St. Lawrence Church were 20 ft. long by 12 ft. broad, and 6 ft. high to the eaves.

Fall of a Flat.—On Wednesday last, Mr. Payne concluded, at St. Bartholomew's Hospital, an inquiry into the death of Mr. Richard Noble, the clerk of the works employed by the Monolithic Fireproof and Sanitary Construction Company, who was killed by the falling of the flat roof of an experimental shop erected on the open ground formerly the New Bunhill-fields Burial-ground. The district surveyor said that the building had been erected by licence of the Metropolitan Board of Works. The construction had been going on for some time. Witness addressed a letter to the company in May last, calling their attention to the unsatisfactory way in which the work was being done. The building was constructed as follows:—Outside walls of concrete, inclosing a space of 50 ft. by 37 ft. The roof was flat, and formed of slight iron girders resting upon the walls. These girders were interlaced with iron wires, and upon this was poured concrete, which was left to harden into one solid mass. This was kept in position by boards laid beneath the girders, and propped up by wooden struts until such time as the concrete became a solid and self-supporting slab. Witness inspected the roof at different times, and thought it not strong enough, and warned the men from time to time. The whole affair was under the control of deceased, and it being a trial of a patent, witness did not interfere so much as he might otherwise have done. He warned deceased himself about the building. Last saw the building at the end of June, when the roof was complete and left to harden, and all the uprights were then in proper position, but there were two or three cracks in the roof, which he pointed out to the man in charge of the premises, at the same time saying, "Unless you are very careful you will have a disaster." The coroner having summed up, the jury deliberated, and eventually returned a verdict of Accidental Death, adding a rider to the effect that deceased was to blame for the accident.

Shaftesbury Park.—The Shaftesbury Park estate, which comprises forty acres of freehold land, in the parish of St. Mary, Battersea, situate at Lavender-hill, near Clapham Junction Station, has been opened in the presence of Mr. Disraeli, Earl Granville, Earl Manvers, the Earl of Shaftesbury, and many persons interested in the project. A large portion of the estate is laid out for building purposes; some of the principal roads being completed, and others are being formed. It is the intention of the directors to erect 1,200 houses on this estate, together with schools, lecture-hall, baths, &c., and three acres of land in the centre will be appropriated to recreation and pleasure grounds; and a site for co-operative stores. They also propose eventually to build a railway station on the property. The houses are built in four classes, containing five, six, seven, and eight rooms respectively (the latter including a bath-room), at the weekly rental of 5s. 9d., 6s. 9d., and 8s., and the best class 26*l.* per annum, which sums, except the best class, include rates and taxes; but if the tenant is buying the house, the rates and taxes and ground-rent have to be paid by him in addition to the purchase-money. The purchase price of the houses ranges from 150*l.* to 310*l.*, on a lease of 99 years, subject to an annual ground-rent of 2*l.* 12s., 3*l.* 3s., 3*l.* 12s., and 4*l.* 4s., according to the class of house. We should be glad to have more precise particulars.

Fireproof Construction at Chicago.—A test of a fireproof ceiling, the invention of Mr. James John, a contractor and builder, of Chicago, was made on the vacant lot on the corner of La Salle and Quincy streets; and the local *Tribune* says of this test:—

"For this purpose a small brick building, 12 ft. 6 in. by 12 ft. 6 in., and 11 ft. high, with two windows and a door, had been erected, and six wagon-loads of barrel-staves placed in it. The match was applied at three o'clock, and a lively fire was soon kindled and under full headway. It burned for two hours, and when it was cooled down sufficiently for an examination, the ceilings and joists were found intact. The main object was to show that a brick building, with ordinary wooden joists in the floor, protected by patent concrete air-chambers, in case of fire in a pile of combustible merchandise, would not burn through from one floor to another, nor injure inseparably the structure. The floors are constructed in the ordinary way, with wooden joists, and the spaces between the joists are filled with hollow boxes of plaster of Paris, surrounded by concrete, and the surface of the ceiling is plastered on single parallel strands of wire. The cost, as compared with iron beams, is about one-half. The patent consists mainly in the application of the concrete to wooden joists. The building will be partially torn down to-day, for the purpose of giving interested persons an opportunity of examining the joists and ceilings. The fire commissioners, fire marshals, and other officials were present, and made many expressions of approval of the new invention."

Sale of Property at Gloucester.—An important sale of house property in Gloucester, and of building and other land near the city, has taken place in the Masonic Hall, at the Bell Hotel there. The sale was held by the direction of the Ecclesiastical Commissioners for England. The competition was spirited, and most of the lots were disposed of, the total proceeds amounting to over 17,000*l.* Mr. J. B. Hanman became the purchaser, at 160*l.*, of lot 6,—a piece of building-ground, containing 2r. 2p., adjoining the New Inn, at Longford. Lot 11, the house for many years used as the Magdalen Asylum, St. Mary's-square, with a frontage of 40 ft. and a depth of 159 ft., was bought by Mr. B. Jordan for 400*l.* The Sheephouse Farm, and building estate of nearly 200 acres, extending from the Gloucester and Berkeley Canal at Hempsted Bridge to the Gloucester and Stroud road, was offered. A 40-feet road has recently been constructed through the estate. Lot 1, a piece of building land, having a frontage to the Bristol road of 400 ft., and containing about 7a. 2r. 16p., was sold to Mr. James Bretherton for 1,200*l.*, who also purchased, at 1,400*l.* lot 2, adjoining, of about similar size, and having a frontage of 400 ft. to the Bristol-road, and a frontage of 700 ft. to the new road. Lot 5, 16a. 0r. 22p. of land on the north side of and having an extensive frontage to the new road, was bought by Mr. Reece Thomas for 1,800*l.*

West-end Dust-bins.—The medical officer of health for Marylebone, Dr. Whitmore, has issued his monthly report as to the health and sanitary condition of his district. After stating that the deaths during the month of June were equivalent to an annual death-rate of 21·97 per thousand of population, being about three per thousand in excess of all London for the same period, the doctor presents a startling picture of West-end dust-bins, and points to the fact that the more aristocratic the neighbourhoods the worse they are. Complaints of the abominable effluvia arising from them are continually made to him; and, strange to say, the disgustingly offensive ones belong to large houses and mansions situated in our most aristocratic streets and thoroughfares. The inspectors have carefully examined many of these, and have found in them large quantities of vegetable refuse in a state of putrefactive fermentation, stinking animal matter, composed of stock meat used in making soup, remnants of poultry, &c., together with crab and lobster shells, periwinkles, sardine, lobster, and oyster tins, some only half empty, and dead kittens. No vegetable or animal matter should under any circumstance be thrown into the dust-bin. The family greengrocer, as Dr. Whitmore remarks, will willingly take away the vegetable refuse, or it can be burned, and there are always at hand destitute poor persons who would thankfully accept the remnants of food.

Liverpool Architects at Cholmondeley and Malpas.—The annual excursion of the Liverpool Architectural and Archæological Society is called a success. The members of the society and friends met at the Lime-street station at eleven o'clock, and journeyed *viâ* Chester to Broxton station, where an omnibus was in waiting to convey the party to Cholmondeley Castle, where the party were received by Mr. Higuett, his lordship's agent, and under his guidance were shown round the mansion. The wonders of the castle exhausted, a pleasant stroll through the beautifully-wooded park brought the party to the ancient chapel. A pleasant drive between banks richly green with fern and overshadowed by trees, whose leaf-laden branches swept in the faces of the outsiders as they were borne past, brought the party to Malpas, the ancient church of which pretty little village had been selected as the *Ultima Thule* of the excursionists. A curious old crypt was explored by the more adventurous of the party,—without any great discovery being made, however. After an inspection of all portions of the edifice, the party adjourned to the Red Lion Hotel, where an excellent dinner had been provided by Mr. Hope. The party afterwards drove to Broxton station, *en route* for Liverpool.

Working Men's Dwellings Bill.—This Bill as amended has been read a third time and passed in the House of Lords. A long-lease system from corporations has been introduced into it in place of selling the land in fee. Lord Shaftesbury said the Bill was intended to give to the working men the power of leaving the crowded cities, and living in their own houses in the suburbs.

Norfolk and Norwich Archæological Society.—This society has had an excursion in the Fakenham district. The president (the Very Rev. the Dean of Norwich), the secretaries, and a goodly number of members were present. The day was a delightful one, the rain, falling a few minutes early in the morning, serving only to cool the atmosphere. The first station from the starting-place, Fakenham, was Tofts parish church, to look at a fine old late Norman font. At Weasenham St. Peter's the party found the restorations which the Rev. Mr. Campbell has been carrying out at his own cost approaching completion. Weasenham All Saints was the next place visited. At Great Massingham the Rev. Mr. and the Lady Arnold invited the company to partake of refreshment at the rectory. Little Massingham Church presented not many features of interest. Harpley Church was the next station. East Rudham Church, recently in great part rebuilt, was then visited. A luncheon at Cranmer Hall (Sir Willoughby Jones had joined the party at Harpley), and a brief visit to the restored fabric of Sculthorpe Church brought to a close one of the most agreeable excursions ever undertaken by the society.

Bursting of a Canal.—The bank of a new branch of the Monkland Canal, above Milnbank Bleachworks (Messrs. Adams & Son's), in the north-east of Glasgow, recently burst by the pressure of the water, a flood of which poured from an opening 20 ft. wide through the bleach-works and into the valley of the Molendinar burn or rivulet, emerging from a culvert in its course, a mile distant, and sweeping away at that point some goods in a tanyard. The goods in the works were strewn about, and left in most parts from 6 in. to 2 ft. deep in mud and *débris*. 250 tons of coal were carried round a house in the works, and the machinery as well as the goods seriously damaged. The workmen's houses in the neighbourhood were flooded to the depth of 2 ft. or 3 ft. No personal injury was sustained, but the damage to property is estimated at from 50,000*l*. to 100,000*l*. Upwards of 300 persons will be thrown idle for a few months in consequence of the damage done to Messrs. Adams's works. A large body of men are employed repairing the damage to the canal.

Royal Archæological Institute. — The annual congress of the Royal Archæological Institute was opened at the Town-hall, Ripon, on Wednesday, under the presidency of the Marquis of Ripon. The proceedings commenced with the reception of the Institute by the Mayor and Corporation of Ripon at the Town-hall, in the presence of a very large assemblage. An address was read by the town clerk welcoming the Institute, and presented to Lord Talbot de Malahide, the president of the Institute, who thanked the mayor and corporation for the hearty welcome. His lordship then placed the Marquis of Ripon in the presidential chair for the meeting, and the Bishop of Ripon, on behalf of himself, the dean and chapter, and the clergy, tendered their hearty welcome to the Institute. By invitation of the mayor and corporation the members and friends of the Institute, to the number of 340, partook of lunch in a large marquee, and then the party adjourned to the cathedral, where its architecture, &c., were described by Sir Gilbert Scott, who has been recently engaged in its restoration.

A Flying Bridge.—A flying or rolling bridge is used to establish communication between the towns of St. Servan and St. Malo, separated by the tidal River Rance. For almost four hours, twice in the day, it is possible to cross over the bed of the estuary by descending steps on one side and climbing again on the other; but the slimy road is not pleasant, and M. Leroyer, town surveyor to St. Malo, and architect to St. Servan, designed and had constructed a flying bridge. It consists of a platform supported on wheels which run on rails laid on the bottom of the estuary. The platform is supplied with accommodation for horses at either side. It stands level with the quay at each side, so that access to it is quite easy; and it is worked at all states of the tide with perfect safety. This is essentially the same invention with that recently noticed in our columns as claimed by a Mr. Muirhead to be original, and proposed by him, on an enormous scale, for crossing the English Channel. He has since admitted its identity with M. Leroyer's invention.

Fires.—No less than fifteen fires happened in the metropolis in the course of Thursday in last week.

The Patent Museum. — In reply to Mr. Mundella, Mr. Disraeli said he was fully convinced that not only the Patent Museum, but several other public departments, were very much inconvenienced by want of space, and insufficient accommodation. The subject was in the hands of the First Commissioner of Works, and would receive his careful consideration.——Mr. E. Reed asked the First Commissioner of Works whether, as the Commissioners had for the future abandoned annual International Exhibitions at South Kensington, the Government would be willing to give early and favourable consideration to the proposal to transfer the Patent-office Museum from its present place to the southern block and adjacent portions of the Exhibition buildings. Lord H. Lennox said it was already his intention to submit a scheme which, if it met with the approval of her Majesty's Government, would be the means of offering more accommodation for the Patent-office Museum.

The Proposed New Slaughter-houses. The Court of Common Council having resumed the adjourned debate on the report of the Cattle Markets Committee upon the reference to obtain plans and estimates for the construction of additional slaughter-houses at the Metropolitan Cattle Market, and recommending that the committee should be authorised to construct, from time to time, as may be required, twenty additional slaughter-houses upon ground on the east side of the market, at an expense not exceeding the sum of 26,000*l*., delivered in on the 21st May last, and then read, adjourned, and ordered to be printed; the court discussed several restrictive amendments, which were rejected, and finally the original motion was carried; and it was resolved that it be referred to the Coal, Corn, and Finance Committee to consider and report as to how the necessary funds are to be raised.

International Exhibitions. — In view of the announcement that it is not intended to continue the present series of Annual International Exhibitions at South Kensington, the Council of the Society of Arts have come to the following resolution:—That the Society of Arts having taken an active part in originating the Great Exhibition of the Works of all Nations in 1851, and having raised the guarantee fund of 450,000*l*., which enabled the Exhibition of 1862 to be carried into effect, it is the opinion of the Council that arrangements should be made for a Conference, about the end of October, to consider the desirability of holding International Exhibitions in this country, and what form, if any, they should take, and to invite the expression of the opinions of competent persons upon the subject, and further to consider the question of holding Provincial Exhibitions.

The Margate Aquarium Company is announced, with a capital of 50,000*l*., in 5,000 shares of 10*l*. each, of which 4,000*l*. are now offered as a first issue for subscription. The company has acquired from the Marquis of Conyngham a lease for 99 years of the foreshore, extending from near the Pier Hotel to the Fort Point, and thence to the Second Point, comprising a frontage of 730 ft. to the sea, at a rental of 50*l*. per annum. The land, comprising an area of 10,000 square yards, is to be reclaimed by the erection of a sea-wall, and the establishment is to comprise an extensive aquarium, ponds for lung-breathing aquatic animals, covered gardens and ferneries, a large hall for concerts, balls, &c., a bazaar, reading and refreshment rooms, swimming and private baths, and covered and open-air promenades,—thus rendering the plan sufficiently comprehensive to meet the tastes of all parties.

Death of an Architect in the City.—An accident has occurred near Finsbury-square, by which Mr. Thomas Seward, an architect and surveyor, of Paul-street, Finsbury, lost his life. A new block of warehouses has just been erected in Short-street, Finsbury, one of which is used by Messrs. Cleghorn & Co., artificial florists; and the roof having got somewhat out of order, the deceased mounted to the top of the house to see what repairs were required. About three o'clock a crash was heard at the back of the house, and it was then ascertained that the deceased gentleman was lying in the area shockingly mangled. He was promptly conveyed to St. Bartholomew's Hospital, but died shortly after admission.

The Grocers' Company's Competition.—Designs for the Middle-class Schools, proposed to be built by the Grocers' Company, on Hackney-downs, have been sent in.

Battersea Bridge.—Sir C. Dilke asked the Chief Commissioner of Works whether the subject of freeing from toll the Government bridge leading to Battersea Park was under the consideration of the Office of Works, either as standing by itself or in connexion with any scheme of the Metropolitan Board for freeing other metropolitan bridges; and whether the promise of the Office of Works to plant the vacant space within Battersea Park, on the west side of that park, was to be carried out. Lord H. Lennox said there were difficulties in the way of freeing the bridge from toll, but he hoped they would not prove insuperable. The vacant space in Battersea Park would be planted out in the autumn, and provision had been made in the estimates to carry out the work.

Association of Municipal and Sanitary Engineers.—A meeting of the Lancashire and Cheshire Branch will be held at the Municipal Offices, Barrow-in-Furness, on the 7th of August. Mr. Jacob will read a history of the rise and progress of Barrow-in-Furness, and the docks, shipbuilding yards, and other objects of interest will be visited.——The members of the Home Counties District will hold a meeting on Wednesday, the 12th of August, at Tottenham, and will visit the sewage works in the Lea Valley, and also inspect the Alexandra Palace. After the inspection of the building, the business of the district will be taken, with a discussion on the day's work, and short papers will be read.

Essays on Thrift.—The judges appointed to award the prizes offered by Sir Joseph Whitworth for essays on the above subject have reported to the Council of the Society of Arts that there is no essay of sufficient merit to be entitled to the full prize offered, but that the essay with the motto "*Labor omnia vincit*" has very considerable merit, and is fairly entitled to recognition by the Society. The Council have, under these circumstances, and with the assent of Sir Joseph Whitworth, awarded 50*l*. to the author of that essay, Mr. Joseph Mason, of Fairview, The Holt, Birkenhead.

Value of Property in Paris.—The house known as No. 1, Rue Balzac, with garden and frontage of 78 ft. to the Champs Elysées, has just been sold by Messrs. Sprent & Phipps, of the Rue de Rivoli, for the sum of 32,000*l*., the superficial area of the land being about 5,400 ft. This price does not seem to indicate any very material depreciation (since the war) of the value of property in the French capital.—*Court Journal.*

Opening of West Ham Park.—The Lord Mayor, accompanied by the Lady Mayoress and several members of the Corporation, have visited Stratford in state and opened West Ham Park as a public recreation-ground. The park was purchased of Mr. John Gurney for 25,000*l*., that gentleman and the Corporation of London each contributing 10,000*l*. towards that amount, and the remainder being got by local subscriptions.

The Charles Knight Memorial.—A meeting of the subscribers to the fund for raising a memorial to Mr. Charles Knight was held on Wednesday, at which it was resolved that the form of commemmoration should be that of one or more scholarships in connexion with the school of the Stationers' Company, and a bronze statue to be erected in the town of Windsor, where Mr. Knight was born.

Cradley.—A campanile or bell tower for a peal of bells, the gift of a lady to the church, is about to be erected at a cost of upwards of 1,000*l*., in connexion with the parish church at Cradley, near Stourbridge, Worcestershire. The work will be executed from the designs of Mr. John Cotton, architect, of Birmingham.

The Proposed Tunnel between France and England.—The French Minister of Public Works has received the report of the Commission appointed to examine the proposal for constructing a tunnel between France and England. The report is favourable to the "annexation."

The Deaf and Dumb Asylum.—On Wednesday the ceremony of laying the foundation stone of a branch establishment of the Asylum for Deaf and Dumb Children took place at Margate.

Great Amwell.—The foundation-stone of the new parish schools has been laid by the daughter of the Lord of the Manor (Captain Brown, of Hailey).

TENDERS

For building the South Metropolitan Temperance Hall, Blackfriars-road. Mr. J. H. Swan, architect :—

Hill, Higgs, & Hill	£10,760	0	0
Burford	10,240	0	0
King & Son	9,696	0	0
Lucas, Brothers	9,660	0	0
Elkington	9,600	0	0
Rider & Son	9,579	0	0
Cooke & Green	9,576	0	0
Dearde	9,088	0	0

For Central Bank of London, Stamford-street. Architect, Mr. Nash. Quantities taken out by Messrs. Franklin & Andrews :—

Hill, Higgs, & Hill	£5,493	0	0
Jarrett	5,369	0	0
Gammon & Sons	5,310	0	0
Oliver	5,279	0	0
Cooke & Greene	5,181	0	0
Coleman	5,159	0	0
Deards	5,158	0	0
Dickenson	5,150	0	0
Trollope	5,149	0	0
Browne & Robinson	5,103	0	0
Killby	5,083	0	0
Downs & Co.	5,060	0	0
Simpson & Son	5,030	0	0
Rider & Son	4,988	0	0

For potting-shed, apple-room, stokery, kitchen-garden, walls, and inclosures, for Mr. L. W. Dent. Mr. T. Dinwiddy, architect :—

Rider & Son	£1,126	0	0
Nightingale	1,097	0	0
Downs & Co. (accepted)	1,060	0	0

For pulling down and re-building the White Hart, New Cross-road, for Messrs. Combe & Co., and fixtures and fittings to same, for Mr. Southcott. Mr. Henry R. Cotton, architect. Quantities by Mr. A. J. Gate :—

	House.			Fittings, &c.		
Battley	£3,500	0	0	£590	0	0
Holloway	3,437	0	0	570	0	0
Patrick	3,388	0	0	648	0	0
Mills	3,290	0	0	445	0	0
Foxley	3,275	0	0	600	0	0
Newman & Mann	3,256	0	0	586	0	0
Hyde	3,246	0	0	507	0	0
Williams & Son	3,184	0	0	557	0	0
Toms	3,106	0	0	517	0	0
McLachlan (accepted)	3,096	0	0	514	0	0

For the erection of schools at Lady Barn, Fallowfield, near Manchester. Messrs. Price & Linklater, architects :—

Credland	£1,631	12	0
Wilson	1,436	10	0
Herd	1,360	0	0
Warburton	1,314	0	0
Holt (accepted)	1,295	0	0
Haynes	1,248	0	0

For villa residence on Magdalene Charity Estate, Hastings, for Mr. W. B. Eagles. Messrs. Jeffrey & Skiller, architects :—

	House.			Wall.		
Howell	£2,830	0	0	£24	12	0
Vidler	2,829	0	0	29	0	0
Rodda	2,730	0	0	32	10	0
Hughes	2,725	0	0	26	13	10

For two houses, Norman-road East, St. Leonard's-on-Sea, for Mr. B. H. W. Tree. Messrs. Hunter & Crisford, architects :—

Womersley	£3,317	0	0
Vidler	3,294	0	0
Howell	2,862	0	0
Parks	2,797	0	0
Wood	2,050	0	0

For alterations, &c., to No. 28, Great Tower-street, London, for Mr. Thomas Stevenson. Messrs. William Gosling & Son, architects. Quantities supplied :—

Ferry	£729	0	0
Vickery	431	0	0
Stephenson	419	0	0
Sawyer	391	0	0
Warr	364	0	0
Greaves	340	0	0
Stead	336	0	0
Staines & Son	328	0	0
Johnston	307	0	0
Raby (accepted)	298	10	0
Stamp & Co.	297	0	0
Cumming & Co.	280	0	0
Horne	255	0	0
Pearce	253	0	0
Hunt	210	0	0

For new clearstory walls, new roofs, and general repairs, to the Church of St. Mary, Brinkley, near Newmarket. Mr. Frederick Thomson, architect :—

Mason & Son (accepted)	£406	0	0

For repairs of church, and decoration of chancel, St. Luke's, Chelsea. Messrs. Goldie & Child, architects :—

Pitman & Cuthbertson (accepted)	£405	0	0

For decoration of Christ Church, Chalton-street, St. Pancras, and repairs, &c., of schools. Messrs. Newman & Billings, architects :—

Pitman & Cuthbertson (accepted)	£493	0	0

For parsonage for the Rev. J. W. Harte, in connexion with St. Mark's Church, Victoria Park. Mr. John Wimble, architect. Quantities supplied :—

Falkner	£2,905	0	0
Williams	2,937	0	0
Dove, Brothers	2,837	0	0
Lawrence	2,704	0	0
Newman & Mann	2,786	0	0
Bangs & Co.	2,760	0	0
Turner & Son	2,690	0	0
Stoner	2,573	0	0

For the erection of a vestry-hall and offices for the parish of St. Sepulchre, Middlesex. Mr. Lewis H. Isaacs, architect. Quantities by Mr. L. C. Riddett :—

Hill, Higgs, & Hill	£2,429	0	0
Roberts	2,368	0	0
Bishop	2,365	0	0
Bayes & Ramage	2,100	0	0
Killby	2,092	0	0
Lister	2,072	10	0
Wall, Brothers	1,993	0	0
High	1,922	0	0
Elkington	1,898	0	0

For public hall and offices at Hackney. Mr. Henry St. John Ingram, architect. Quantities supplied by Mr. Hollands :—

Merritt & Ashby	£5,993	0	0
Cooke & Green	5,455	0	0
Killby	5,411	0	0
Waldram & Co.	5,320	0	0
Wilson, Brothers	5,249	0	0

For sewers for the vestry of St. Leonard's, Shoreditch. Mr. G. C. Perrett, Surveyor (Messrs. Waterlow paying 400l. towards the cost) :—

Rendall	£868	0	0
Marshall	750	0	0
Wood	739	0	0
Waldram & Co.	674	0	0
Wainwright	650	0	0
Keeble	593	0	0
Pearson	549	9	0
Harris	539	0	0
Barnes & Gardiner	460	0	0
Wall, Brothers	320	0	0

For certain additions and alterations to the museum and library, Queen's-road, Bristol. Mr. S. Colman, architect. Quantities by Mr. A. Deane :—

Brock & Bruce	£6,193	0	0
Kington	6,168	0	0
Church & Phillips	6,150	0	0
Eastabrook & Sons	5,998	0	0
Davis & Son	5,985	0	0
Veals	5,800	0	0
Wilkins & Son	5,750	0	0
Baker & Son	5,700	0	0
Howell	5,637	0	0
Krauss	5,550	0	0
Diment	5,399	0	0
Bryant	5,160	0	0
Cowlin & Sons (accepted)	4,850	0	0
Summerville	4,657	0	0

For schools to accommodate 750 children for the Bristol School Board. Mr. Stuart Colman, architect. Quantities by Mr. A. Deane :—

	Schools.	Boundaries and Playgrounds.
Davis & Son	£3,385	£335
Diment	3,319	328
Bryant	3,311	305
Eastabrook & Son	3,175	322
Walters & Crick	3,049	317
Summerville	2,938	303
Krauss	2,918	302
Cowlin & Sons (accepted)	2,907	305
Beaven & Son	2,839	307

For the erection of Christ Church Vicarage, South Hackney. Messrs. Henry Jarvis & Son, architects :—

Falkner	£2,587	0	0
Tarrant	2,500	0	0
Lawrance	2,494	0	0
Downs	2,492	0	0
Ennor	2,477	0	0
Hearle	2,475	0	0
Stevenson	2,462	0	0
Shepherd	2,413	10	0

TO CORRESPONDENTS.

Erratum.—The concluding portion of the homily quoted by Professor Donaldson, p. 604, *ante*, should read :—"Fancying *unduely*, that all people should be more moved to due reverence of the house of God, if all corners thereof were glorious and glistering with gold and precious stones."

"Ecclesiastic" (we did not print the letter last week stating that the consideration of the designs for St. Paul's was postponed, simply because we had given, a week before, the information it contained).—J. W. R. (any drawings sent shall have attention, and they shall be returned).—A. J. G.—A. & H.—P. & R.—"Class Room."—R. V.—R. L. R.—D.—H. S.—P. & L.—J. F.—H. H.—J. R. G.—J. P.—Mr. C.—S. F. S.—D. W. W.—G. & Son.—A.—E. B.—G. B.—L. C. R.—W. & Co.—E. B. G.—The Law of Noxious Businesses (in type).

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